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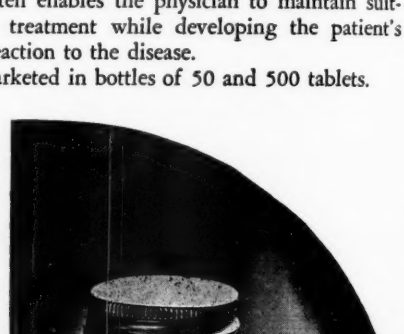

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Editorials

IN PASSING TAKE A LOOK AT MICHIGAN'S NEW WOODEN HORSE—ITS SINAI "HEALTH SCHEME"

At times the capacity of the great American gullet to swallow any fool idea that the modern P. T. Barnums stick into the great American throat amazes even the biggest gulls among the gullibles.

If Jonah had lived in America today, the probabilities are that he himself, would have been out, swallowing the whale instead of letting the whale swallow him. Undoubtedly too, Jonah would write after his name—"M. D."

At the rate in which the medical profession is playing the boob and letting itself be used as bait, lure, come-on, go-between and cats-paw for those forces of supertaxation, bureaucracy and high priced socialism such as are foredoomed by the law of averages, the routine of history and the rhythm of experience to destroy our careful and humane civilization that has been literally built out of the brain and the blood and the sinew of almost four generations of self-sacrificing patriots and upon the corner stone of individual rights,—there is no doubt that the tribe of fools could easily pick a king from the ranks of the overtrusting as well as overworked "M. D.'s." In passing take a look at Michigan's new wooden horse—its Sinai "health scheme."

How many doctors can give a lucid epitome of any benefit to physician, patient, populace or state that will result to any degree from the highly propaganda-ed "State Medicine" or "Health Insurance" schemes? Or of anything but misery in its wake?

Yet this exacting evil is even today ensconced in our midst. In Michigan the door has been flung wide for its entrance. And that it enters with a veil over its face makes it no less an evil.

In very truth State Medicine and Compulsory Health Insurance have changed from a transient mirage for the American people, to a throat gripping menace. At present, the focal point of at-

tack of this terrible enemy seems to be Michigan and the weapon the new Michigan Health scheme.

Socialistic approval of health insurance is as ubiquitous as the drouth. One of the most terrible blows that has come to the ethics of the profession is the approval in principle and for experiment by the Michigan State Medical Society of a health insurance plan providing complete medical, surgical, dental, hospital, nursing and optical care to the lower paid classes at a flat yearly sum of slightly more than $100 per family or $27.88 per person.

The one string on the scheme is that it shall be "professionally controlled" which is not such a communistic drawback as it might seem to be at first sight. Michigan gets good backing from communistically inclined wealth elsewhere. There is where the peephole lies. A "peephole," too, that is all "peephole" and not one whit "peep-ul."

Further the Milbank Memorial Fund of New York, an endowment that lives in the tempo of millions, openly declares itself for compulsory health insurance and smiles upon Michigan. The string on this is "State control." Which of course means, politics practicing medicine. What the casual man fails to see is the hidden contact between Milbank and Michigan. Each spells socialized medicine, either by "voluntary" or "compulsory" route. Each of these items is a straight line approaching the same focus.

The action of the Milbank Fund is not surprising. The principal supporter of the Committee on the Costs of Medical Care, this tendency was written all over that highly unfair, and greatly criticized report. Their henchman Nathan Sinai, has mixed the Michigan pie.

The Milbank Fund's action is after all, merely the grand gesture of the laity.

With the Michigan State Medical society, it is another matter. Here is a group of physicians playing Delilah without a blush, and hiding behind the word "voluntary."

For on April 12, at Flint, Michigan, the House of Delegates of the Michigan State Medical society held a special meeting where preliminary endorsement was given to a system of voluntary health insurance entitled "Mutual Health Service." When the Michigan society has its annual meeting in September final decision will be reached as to whether this service shall become operative. Meanwhile investigation is being made as to the determination of the legal status of the plan, and the necessary legal procedure as to the organization of the plan. If the scheme becomes operative it is expected that the Michigan State Medical Society will limit its operation to a few counties for "preliminary experience." Now "preliminary experience" is a rare phrase in this connection.

Already the alumni of the medical school of the University of Michigan has to practice in competition with the alma mater. Here is another pig in a poke being wished upon the long suffering practitioners in this equally long suffering state in which the way of the socialist is easy and the way of the patriot is as hard as politics and socialists can make it, while the path of the taxpayer is like that of poor Christian in John Bunyan's "Pilgrim Progress."

The real high light on what is being visited upon the taxpayers and the medical profession in Michigan shines out in splendor with the information that the Michigan State Medical society has decided upon this plan as the result of an economic survey in Michigan which was made under the direction of a special (?) committee by that same Nathan Sinai who was a former investigator for the Committee on the Costs of Medical Care, that was mainly supported by the Milbank Memorial Fund that has now come out for State medicine, and for Compulsory Health Insurance, and which report was practically repudiated by the majority of the honest men in the medical profession and hugged to the bosoms of all the parlor pinks and political jobbists and high paid leaches of the laity fortunate enough to be on the thick payrolls of misguided economists and would-be philanthropists. Also of the snoopers, the snipers, and the men who must mind everybody else's business, brook no interference in their own and are hell-bent to commercialize medicine and to deliver the science and practice of medicine into the hands of department store chiefs, and political bureaucrats. Behind all this is the hand that rules the soviet and would like to rule the world,—the hand of communism, of lay dictation of conscience and the hand of chaos.

Some of Mr. Sinai's remarks may as well be interpolated right here. They will give the profession something to think about and probably inspire more than one man who respects the science of medicine to start a fund to send a

few missionaries into the misguided wilds of Michigan.

Says Mr. Sinai, in part:

"In the proposed experiment, if an industry in some county of Michigan is interested enough to *experiment* with the medical profession, undoubtedly that industry would make the Service *compulsory* for the employes engaged. In that way it would get away from the question of volition. (Ed.'s note—yet we were to understand were we not that Michigan was taking up *voluntary* health insurance? But now getting back to Mr. Sinai's comment—)

"The fact is we would be very fearful of leaving it on a purely voluntary basis to the members in that industry became what would result?

"A few people in that industry who know that they need surgery, whose wives are going to have babies, who know they are going to have specific medical services within the next two weeks or the next month would sign up and just as soon as the service *was secured they would sign off.*"

In other words, Mr. Sinai admits right straight from scratch that to make the Michigan experiment succeed it must be from the start a matter of *must,* rather than of *may.*

Further this astute modern lawgiver, the new Moses of socialism, the ultimative Mr. Sinai, remarks with a great expenditure of phrase if not of felicity that while this service will be voluntary in *name,* that it will not be operative unless made compulsory by employers and that it should not be made operative unless 75 per cent of the employes in any given industry come under the plan. "For otherwise," Mr. Sinai explains, "we will get a very dangerous selection in our group of population."

Now getting down to items and brass tacks it evolves that the preliminary form of this plan calls for complete health insurance to include the services of physicians, dentists, registered nurses, pharmacists, laboratories, hospitals, as well as drugs, medical and surgical, and optical appliances. The cost to the insured person would be $27.88 per person, of which the general practitioner would receive $5.00 a year plus 50c for a report of an annual physical examination and 25c for a report of immunization. An additional $3.00 would be allotted for the services of specialists including surgeons. This amount would be made available to the general practitioner if he was deemed competent to render specialized service. Dentists would receive $5.00 while $2.50 would be allotted for nursing services; $5.00 for hospital services; $1.00 for laboratory services; administration $2.42 and $1.21 towards a surplus. It is interesting to note that the same amount of $5 is set aside for the physician, dentist and hospital which presupposes that the demands for these three services are of equal magnitude.

The plan would exclude hospital services for mental illnesses and tuberculosis and covers full hospital payment for but a period of 21 days during any one year. For any illness requiring hospitalization for more than 21 days but less than 90 days, the Service would pay 75 per cent of the per diem hospital charges.

The services of a special nurse would be limited to a period of thirty days for any one year or sixty days for the services of a visiting nurse. The subscriber would pay the original 25c charge on each prescription and the Service would pay the balance.

This plan is for employed persons only and the cost of the subscription shall either be borne by the employe or jointly by the employe and his employer. Under action of the House of Delegates, however, the Service would not be available to any person who earns more than $1,500 a year. Thus, a man and wife and three children where the husband was earning $1,200 a year would have to pay $139.40, or 11 per cent of his income, to be covered by the Service. One-half the amount might be paid by the employer if he elects to do so.

Please notice that 11 per cent of a man's income for "voluntary health insurance" is about forty per cent of the twenty-five per cent of an income usually allotted by the professional budgeteers as the amount permissible for a man or a family to pay for shelter! And far more than that allowed for apparel. Getting further along into this scheme it is still more interesting to see how much of this eleven per cent is alloted for medical care. Physicians would be limited to 1,000 patients under the plan so that the gross income of the general practitioner would be limited to $5,750. Provision is made for absolute free choice of physician, apparently without regard to whether the physician is a member of the Society or not. Direction of the plan would be vested in a committee of eleven of which three are physicians. Other members

of the committee are one dentist, one pharmacist, one registered nurse, one hospital superintendent, two laymen representing industries, and two laymen representing recipients of the health services.

Now, how any man in his sense can call this a *medically scientific majority,* it will be very interesting to learn. This editor has run up against similar combines before and probably so has every other man of medicine who has had to go out and buck the finger of politics in the pseudo-scientific set ups of sovietistic schemes.

Elaborate detail and precise provision is made for both local and district supervision under the set-up of the plan, though in every instance these provisions, though seemingly "for the profession, and of the profession and by the profession" where a matter of medical rights is concerned, actually pivots so that the bulk of the balance of power lies with the laity. It is a veritable leaning Tower of Pisa in this angle of it all. Now in a special committee report adopted by the Michigan delegates, the plan is based on the belief that there will be a probable development in the United States towards *compulsory health insurance in some form or other.* The Michigan report itself says blithely: "If the experiment with the Mutual Health Service is successful, the profession will be in an exceedingly strong position to direct public opinion and thereby control legislative action in the interest of public welfare."

Michigan is getting down to admit that politics rather than professors is leading medicine around by the nose. But let us proceed.

All of these ideas bear right out the unchanging contentions of the sane section of the organized medical profession that a system of *voluntary* health insurance would be unable to interest sufficient persons to secure the scope of risk implied by the word "insurance" itself; and so that all plans for "health insurance" must necessarily include some form of compulsion; and that *state controlled compulsory insurance* will be reached easily through the stepping stones of various of these so-called "voluntary" schemes.

Now in all due justice to the State of Michigan and its Medical Society it must be admitted that the keenest of medical economists are racking their brains for a way in which to build a bridge between the old order and the new but considering the engineering done by Nathan Sinai on the "Report of the Committee on the Costs of Medical Care" it is hardly to be expected that this honest group of doctors would care to accept in good faith any more elaborate structures from Mr. Sinai. After all, "Nate" is not a licensed M. D.! Nor, an acceptable Doctor of Engineering either! Somehow there exists quite a suspicion as to the verities of his structures.

It does not make any difference with how many fine phrases and long winded sentences and elaborate citations, a fact is wrapped around, it remains the same fact, nothing less and nothing more. State controlled, compulsory health insurance is a very, very bad business, for medicine, for doctors, for the citizenry and for the country. In Europe it has been tried and found wanting. Moreover, the application of the "panel" system or of "state medicine" or of "compulsory health insurance" has practically fetched about the debacle of medical progress in those countries wherein the nation has been saddled with such a millstone. It does not matter how it is called, this nefarious system. It is always the same old evil.

Because it is new, here in America, because it is not a handicap to the nation that has been tried, and cast forth, is no argument for its adoption. The control of medical care by forces and agencies outside of the medical profession is unthinkable, but certainly serious thought should be given and deep investigation made before the profession puts itself under the thumb of any bureaucracy, even one self-arrogated from its own ranks. The advancement of the medical profession and social progress must go hand in hand. One cannot destroy the other and live. Unfortunately the medical profession has always had the same attitude towards the public welfare that the pelican has towards its young—to feed it with blood from its own breast.

The scheme evolved by Michigan comes principally from Mr. Nathan Sinai who went abroad with Dr. Henry A. Luce. Epitomized the scheme is here outlined:

The scheme proposed involves the payment into a central treasury of a stipulated sum for each person assured of medical service. From this fund the general practitioner, the specialist, the dentist, the nurse, the hospital, the druggist,

and so on, will be paid *pro rata*. Nothing is said about the butcher or the landlord.

As now planned, this American version of the mutual health service idea promises to be unlike any of the existing twenty-four European health insurance plans, in that it will provide every manner of health service for a flat annual fee. How about food and shelter?

Just what that fee is to be has not been finally determined as yet. However, a tentative figure of $118 has been named.

Let it be repeated that one of the findings of the preliminary investigation of the subject of health insurance (costing the Michigan State Medical Society about $15,000, all told), was that, figured over a long period, the annual health cost of the average person runs about as follows annually:

General practitioner of medicine	$ 5.00
Report of annual physical examination	.50
Report of immunization	.25
Medical specialists' services	3.00
Dental services	5.00
Nursing services	2.50
Hospital services	5.00
Drugs, medical, surgical, optical appliances	2.00
Laboratory services	1.00
Total	$24.25

Adding to this total the sum of $2.42 for administration costs and 5 per cent of the total, or $1.21 for the purpose of establishing a surplus, the framers of the proposed Michigan plan arrive at a total of $27.88 per person as a tentative annual fee.

For the purpose of administering the plan, the committee estimates that the average family consists of four and a fraction persons. It has therefore set $118 as the tentative fee for which the family, regardless of whether it has two members or a dozen or more, may subscribe to the Mutual Health Service. Will this subscription be a "may" or a "must?"

For this amount it is proposed that the head of the family and his dependents shall be assured of full medical, surgical, dental, hospital, nursing, and optical care, including the cost of prescribed drugs, trusses, braces, and the like. Where are the shoes and overcoats?

On the administrative side, the suggested setup is this: There is to be a board of governors consisting of eleven members. This number is to comprise three medical men, one dentist, one pharmacist, one nurse, one hospital superintendent, two representatives of industry, and two representatives of the lay public. How long before the lay quartet will run the whole show?

It will be the duty of this board to supervise the administration of the plan and to constitute a board of review for all matters referred to it by the county or district committees, made up in turn of five members representing the county medical, dental, hospital, nursing, and pharmaceutical organizations. See where the laity gets in its work?

As one of the results of the thorough study of the question of health insurance made by the entire committee in this country and by the committee of two, Dr. Luce and Mr. Sinai, sent to England, Michigan hopes to be able to avoid in her own plan the evils and weaknesses apparent in the projects thus far studied. For example, the committee feels that the combination of the dole and health insurance, as found in England, is distinctly undesirable.

Three cardinal points in the proposed plan are: 1. Free choice of physician by the subscribing family; 2. Absolute control of the program by the medical profession without governmental or lay interference; 3. The exclusion of any efforts to exploit health insurance commercially according to its propagandists.

"Keep politics out of it!" "No profit-making commercial exploiters!"

These are the slogans of the Michigan State Medical Society as it presses toward its goal of making Michigan the first state in the Union to have a system of so-called health insurance *administered and controlled solely by the medical profession.* But is that the truth?

But remember that last year this same body turned thumbs down on any tangible idea of health insurance, only to embrace it whole-heartedly on a second and later consideration, and now will actually launch a system of socialized medicine—a system which it intends shall be *the medical profession's own undertaking in the field of socializing medical care.* But how long and by what part of the medical profession will such a system be controlled?

There is a suspicious similarity too between those principles and those set down as tenets by the Milbank Fund through its representative John A. Kingsbury, secretary of the fund, who has been busied lately in making a great many speeches. Perhaps these similarities should be called "Sinaisms" since Mr. Sinai seems to be

the man behind the gun in both instances. For compulsory health insurance under state control Kingsbury advances as the idea emanating from the Milbank Memorial Fund:

1. Compulsory sickness insurance for all families with annual incomes of less than $3,000 or $5,000.

2. Plan to be grounded on a state compulsory basis.

3. Medical benefits to fall into two classes:

(a) First to include general practitioner, hospital care, and perhaps prescribed medicines;

(b) Second class, not mandatory, to include services of medical specialists, dentistry, nursing, laboratory and clinic service, etc.

4. General practitioner can be paid a sum, according to Mr. Kingsbury, equivalent to at least $7.50 per insured person (amount presumably to be determined by legislation).

5. Total cost of insurance per person estimated at $36.00 a year to be financed 20 per cent from taxes and 80 per cent from direct contributions of insured persons, or contributions shared between employer and employes, or borne entirely by the state.

6. Lay supervision of financial and executive problems.

7. Professional supervision for professional personnel and problems, with a judicial agency, combining lay and professional representatives to deal with complaints and grievances.

"European experience," declares Mr. Kingsbury in admitting the contention of organized medicine, "shows clearly that every voluntary scheme is merely a bridge to a compulsory scheme. * * * Unfortunately, many of the worst abuses which develop under voluntary schemes are carried over into the compulsory stage * * *."

Mr. Kingsbury's "tentative proposal" calls for paying the general practitioner $7.50 per insured person, pointing out that the practitioner who serves 1,000 potential patients would receive a *gross income* of something like $7,500 and added "the practitioner who serves 2,000 obviously would receive more."

While declaring that his prosposal does not call for "State medicine or public medicine or the socializiation of medicine," the title of the newspaper release for Mr. Kingsbury's address was "Urges Study for Compulsory Health Insurance and State Control." The Kingsbury plan involves reorganization of present methods for the delivery of medical services and while it presumes to include no cash benefits, would include them in fact if no better method could be devised. Mr. Kingsbury urged leadership upon California for the new State system inasmuch as California already has a State Senate Committee on Investigation of the High Costs of Illness. "Experience and occasion thus combined to give California an opportunity to blaze the trail in the search for a better way to furnish health service and medical care to the people," said Mr. Kingsbury.

Digesting these facts with a bit of care, would seem to re-emphasize what has been said in these columns with repeated frequency before, "No matter how you coat this bunch of bunk, it is still the same old raucous ballyhoo."

It is a shame that men of trained minds and a knowledge of human nature will swallow such a mess. Doctors are notoriously credulous. Of late years the bulk of the rank and file has become pretty desperate. But even our credulity and our desperation and our professional optimism is no excuse for standing by while the hand of communistic destruction forces such a terrible monster of bureaucratic levy as is compulsory health insurance upon the already overburdened backs of a wearied populace. If health insurance, compulsory or otherwise, actually functioned as it is supposed to do, that would be a different matter. But actually it aids no man but the politician.

Shakespeare said, "What's in a name? A rose by any other name would smell as sweet."

With apologies to the bard of Avon let it be connoted, "What's in a name? Communism in any other guise smells as offensively." And that does double for communism masquerading as any such Santa Claus stunt as this so-called "health insurance scheme" of the Sinais, the Milbanks and other misguided foundations, funds, and red medicine propagandists.

THE ATTORNEY GENERAL OF ILLINOIS WINS FIRST ROUND IN COURT FIGHT AGAINST CORPORATIONS PRACTICING MEDICINE

On July 6 in Chicago the attorney general of the state won a preliminary legal skirmish against the United Medical Service, Inc., 23 East Jackson Blvd., when Superior Judge James J. Kelly refused to vacate an order granting the

state leave to file quo warranto proceedings against United Medical Service, Inc.

The state's efforts to halt the operation of the corporation is by an action that would force the officers to show by what right the institution is maintained.

The attorney general charges that the United Medical Service, Inc., is a corporation practicing medicine in violation of state laws.

Judge Kelly's ruling will result in a trial of issues in the case. The court granted the request of the attorney for the corporation for a jury trial, and also gave the corporation attorney sixty days in which to file a bill of exception and thirty days in which to demur to the petition for quo warranto.

WAYNE COUNTY, MICHIGAN DOCTORS ARE NOT ALL AGREEABLE TO MUTUAL HEALTH INSURANCE PLAN

According to the *Detroit Medical Times*, July *16, 1934*, the Wayne County Medical Society, Committee on Elections, gave out the following data in answer to a questionnaire relative to mutual health service plan, the replies were as follows:

Answers to the questionnaire on the Mutual Health Service Plan of the Michigan State Medical Society, as returned by members of the Wayne County Medical Society:

1. Do you wish the Wayne delegates to oppose the action of the Michigan House of Delegates with reference to an experimental plan of *insurance?*

Yes .....265 No 51

2. Do you wish the Wayne delegates to use their own judgment?

Yes .....144 No 145

DINITROPHENOL DANGEROUS IN "REDUCING" NOSTRUMS

The *"reducing racket" has a group of new* and dangerous drugs, dinitrophenol and related compounds. Racketeers are selling these drugs in fat reducers in spite of reports of deaths caused by their compounds, says W. G. Campbell, Chief of the Food and Drug Administration. "Reducing agents containing these drugs," says Mr. Campbell, "have sprung up like mushrooms all over the country, and are endangering the lives of patrons. The Federal Food and Drugs Act has no jurisdiction over products of this type, dangerous though they may be. All *that the Food and Drug Administration can do* is to warn the public that these compounds are *dangerous."*

Clinical evidence shows, Mr. Campbell said, that these drugs act by increasing the metabolic rate. This amounts to a speeding up of the body processes, resulting in a destruction of the *tissues, including fat, to provide fuel for the* accelerated metabolism. Common symptoms are increased temperature, pulse or respiration, or copious sweating. In particular, Mr. Campbell warned, these drugs should not be used by individuals suffering *from chronic rheumatism,* alcoholism, tuberculosis or diseases of the heart, *liver or kidneys, as poisonous and otherwise* harmful effects are even more likely to manifest themselves. There is also some evidence that they may cause profound disturbance of the blood-forming organs.

These drugs, in common with many others, may serve a useful purpose when the dosage is *properly adapted to the needs of the individual* patient, provided there are no contra-indications to its use, he says. Proper dosage and indications for use, however, as well as prompt discovery of toxic effects, can be determined only by a skilled physician. Furthermore, there may be unexpected harmful effects that are not disclosed by *the first tests. Such effects* can be determined conclusively only after extensive trial and use, in addition to the tests which should in all cases be made before the preparation is offered to the public.

Correspondence

THE MANNER IN WHICH WESTERN HOSPITAL ASSOCIATION FEATURED COMPULSORY HEALTH INSURANCE

Hospital Forum
Portland, Oregon
June 26, 1934.

Dear Dr. Whalen: I wish to compliment you on the editorial fearlessness with which you are *treating socialism in medicine. I hope you will* permit me to reprint some of your editorials in our journal.

Because you may not be aware of the manner

in which the Western Hospital Association featured compulsory health insurance at its recent Sacramento convention I am forwarding copies of our magazine covering that subject. You will note how I was taken to task by Dr. French, yet applauded by R. D. Brisbane (both in May issue).

The Milbank Fund may work through hospital associations in the East, hence the significance of the California effort.

GEORGE L. GREENE, Editor.

PRESERVE THE OLD RELATIONSHIP BETWEEN PHYSICIAN AND PATIENT AND KEEP UNCHANGED THE HIGH IDEALS

Mississippi State Medical Association
Office of the President
Natchez, Miss.

May 5, 1934.

To the Editor: During my term of office as President of the Mississippi State Medical Association I have enjoyed reading the ILLINOIS MEDICAL JOURNAL very much. It is filled from cover to cover with interesting and instructive reading matter. The scientific articles are of a high order of excellence. It is ably edited.

I was especially interested in the articles dealing with medical economics. This subject is one that I believe to be of great importance during these days of economic change that is prevalent throughout our land. This subject has not received in the past from the profession as a whole the consideration that it should. There are economic problems before the profession today that must be settled in a manner satisfactory to both the medical profession and the public, if we would *preserve the old relationship between physician and patient and keep unchanged the high ideals that have governed the conduct of the physician in the past.* The public expects the medical profession to take the lead and present a satisfactory solution of these problems. We cannot solve these problems if we do not study the situation and do constructive planning. Organized medicine must not content itself by simply meeting and condemning this or that solution; we must criticize constructively if we would justify to the public our right to leadership in matters pertaining to the practice of medicine.

As President and on behalf of the Mississippi State Medical Association, I wish to extend to the Illinois State Medical Society our greetings and best wishes for a very interesting and successful annual meeting this month.

J. W. D. DICKS,
President.

DOCTOR WINS SUIT AGAINST ONE OF THE CHISELING INSURANCE COMPANIES

To the Editor: On July 3, 1934, there ended in the Circuit Court of Cook County a case which will be instructive to all doctors who take care of the occasional case of an employe injured while at his work.

In 1930 one of my regular patients came to me with a hand infection produced by an injury occurring during his work. I treated him. The last time was about forty days after the injury. A week after he first consulted me the Continental Casualty Company sent me a blank form asking for a report on his injury, which I filled out and returned to them. The same was done with one or two later report blanks.

After the patient was well I sent *him* a bill for services, making my regular charges to him as to any of my other patients. A few days later I received a letter from the insurance company asking for an itemized bill, which I sent him. Later I received a check from the insurance company for about 50 per cent. of my bill and a letter saying that the check was in conformity to fees they were regularly paying to other doctors. I returned the check with a letter saying that the fees charged were my regular fees which I expected to be paid, that I did not allow anyone else to determine the value of my services, and that I did not do enough work for them to justify giving them a special price or discount.

Later I received from them a letter saying that my charges "were not in conformity with the usual and customary rates and were considerably more than the amount designated by the Industrial Commission of this state which has jurisdiction over such matters." They tried to deceive me into believing that the Industrial Commission had established a fee schedule.

I replied that the Industrial Commission had no jurisdiction over my fees to my private patients. Later I sued the patient for the bill in a Justice Court and got a judgment, though the

insurance company lawyer represented him and tried to persuade the Justice that the Industrial Commission had set certain fees. He then appealed the case and the appeal recently came to trial with the result that my bill was allowed.

The Chicago Medical Society furnished an attorney to represent me at both trials with the hope of establishing a precedent against these "chiseling" insurance companies, and the society has now won two other such cases.

Let me state just what this case determines for you.

1. You can collect your regular fees in cases of industrial accidents if you have *not* made any agreement as to fees with the employer or the insurance company.

2. The Industrial Commission or even the State of Illinois cannot set your fees. If there is a dispute the Court or perhaps the Industrial Commission, in cases of workman's compensation, may pass upon reasonableness of the fees.

3. Don't let the Insurance Company "bluff" you out of your regular fees if you have made no definite agreement with them.

4. The Chicago Medical Society is working to protect your financial interests.

LESLIE W. BEEBE.

Oak Park, Ill.

WOMANS AUXILIARY TO THE ILLINOIS STATE MEDICAL SOCIETY—OFFICERS FOR 1934-35

President—Mrs. Lucius Cole, 1117 North Lathrop Avenue, River Forest.

President-Elect—Mrs. William D. Chapman, Silvis.

First Vice-President—Mrs. William R. Cubbins, 425 Arlington Place, Chicago.

Second Vice-President—Mrs. Hugh I. Conn, Newman.

Third Vice-President—Mrs. Meyer Solomon, 5426 East View Park, Chicago.

Corresponding Secretary—Mrs. J. P. Simonds, 25 East Walton Place, Chicago.

Recording Secretary—Mrs. William Raim, 1653 North Merrimac Avenue, Chicago.

Treasurer—Mrs. Frank P. Hammond, 6020 Drexel Avenue, Chicago.

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Second District—Mrs. E. G. Beatty, 621 West Lincoln Street, Pontiac.

Third District—Mrs. A. H. Brumback, 1503 West Jackson Boulevard, Chicago; Mrs. G. Henry Mundt, 7000 South Shore Drive, Chicago; Mrs. N. M. Percy, 2130 Lincoln Park West, Chicago.

Fourth District—Mrs. F. E. Bollaert, 1300 18th Avenue, Moline.

Fifth District—Mrs. M. B. Jelliffe, 1335 Lowell Avenue, Springfield.

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Tenth District—Mrs. I. L. Foulon, 608 Washington Place, East St. Louis.

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Joe Daviess	Lee	
Stephensen	Bureau	
Winnebago	LaSalle	
Boone	Putnam	
McHenry	Marshall	
Carroll	Woodford	
Ogle	Livingston	
DeKalb		
Kane		

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Rock Island	Tazewell	Adams
Henry	McLean	Brown
Mercer	Mason	Cass
Stark	Logan	Pike
Henderson	DeWitt	Scott
Warren	Menard	Morgan
Knox	Sangamon	Calhoun
Peoria	Montgomery	Greene
Hancock		Macoupin
McDonough		Jersey
Fulton		Madison
Schuyler		

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Shelby	Edgar	Wabash
Moultrie	Coles	Franklin
Bond	Cumberland	Hamilton
Fayette	Clark	White
Effingham	Jasper	Williamson
Clinton	Crawford	Saline
Marion	Richland	Gallatin
Clay	Lawrence	Johnson
		Pope
		Hardin
		Massac

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Program—Mrs. T. O. Freeman, Mattoon.

Legislative—Mrs. William D. Chapman, Silvis.

Convention—Mrs. H. J. Dooley, 736 North Elmwood Avenue, Oak Park.

Revision—Mrs. R. F. Stanton, 1127 Baugh Avenue, East St. Louis.

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Printing—Mrs. Rollo K. Packard, 6901 Paxton Avenue, Chicago.

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Archives—Mrs. Henry W. Grote, 1209 Elmwood Road, Bloomington.

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Cook County: President, Mrs. John A. Wolfer, 415 Surf St., Chicago.

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Recording Secretary, Mrs. F. P. Hammond, 6020 Drexel Ave., Chicago.

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Program, Mrs. C. R. Smith, Villa Grove.

Press & Publicity, Mrs. George Fuller, Tuscola.

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Hygeia, Mrs. S. J. Veach, Atwood.

Historian, Mrs. J. O. Cletcher, Tuscola.

Membership, Mrs. E. S. Allen, Arcola.

Kane County: President, Mrs. Alexander McCormack, 265 Hamilton Ave., Elgin.

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Officers to be announced later.

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Membership, Mrs. A. E. Dale, 1645 N. Vermilion, Danville.

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Public Relations, Mrs. E. G. C. Williams, 308 W. Winter Ave., Danville.

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Hygeia, Mrs. S. M. Hubbard, Ridgefarm.

Courtesy, Mrs. T. E. Walton, 203 W. Madison, Danville.

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Historian, Mrs. C. L. Bennett, 116 Robinson, Danville.

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Committee Chairmen: Press & Publicity, Mrs. J. O. Firth, 215 West Broadway, Monmouth.

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Legislative, Mrs. W. M. Crosier, Alexis.

Hygeia, Mrs. Daniel Simmons, Roseville.

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Treasurer, Mrs. Lloyd B. Andrew, 218 Farragut Place, Joliet.

Secretary, Mrs. Earl R. Steen, 308 Sterling Ave., Joliet.

Woodford County: President, Mrs. R. E. Gordon, El Paso.

Vice-President, Mrs. W. S. Morrison, Minonk.

Secretary and Treasurer, Mrs. R. T. Rodaway, Roanoke.

REPORT OF EDUCATIONAL COMMITTEE

June-July, 1934

One of the chief summer activities of the Committee has been the arrangement of public health programs for the Century of Progress, Hall of Science, sponsored by the Chicago Medical Society. Health lectures have been given every afternoon except Sunday by members of the Society. The public, if the attendance is an indicator, seems to be interested and physicians who have been on the programs have felt the time well spent.

65—Physicians have been scheduled to give health addresses before lay groups during the two months.

Many requests for health programs during the coming season have been received and taken care of.

RADIO

37—Radio programs were given during the period. Station WAAF was burned during the Stock Yards fire and has just opened new studios at the Palmer House with two programs a week from the Illinois State Medical Society. The WGN Tuesday broadcast was discontinued for the summer because of special Century of Progress programs. This station, however, has asked the Committee to resume the broadcasts the first of October. Station WJJD has been used all summer.

SCIENTIFIC SERVICE

6—Scientific speakers have been scheduled for county medical society programs. A new list of scientific speakers is now in the process of being compiled; when finished, it will be furnished the officers of county medical societies and no doubt will offer many suggestions for scientific programs during the year.

2—Clinics for handicapped children were held by Warren County Medical Society and Whiteside County Medical Society. These were both highly successful, with many follow-up cases reported and a number of new cases presented.

Arrangements are being made to furnish programs during the year to the Scott, Iowa, County Medical Society, the Paris Hospital of Paris, Illinois, and Rock Island County Medical Society.

PRESS RELEASES

774—Newspaper health columns were sent out during the two months.

40—Newspapers received the regular monthly health article.

450—Popular health articles for posting on bulletin boards were furnished Chicago libraries.

484—Similar articles were furnished down-state libraries.

10—Articles were furnished the Red Cross headquarters.

10—Popular articles were sent to Central Y. W. C. A. of Chicago for posting in the Health Education Department.

SPECIAL SERVICE TO COUNTY MEDICAL SOCIETIES

Special notices relative to county medical society meetings were sent to physicians, as follows:

179—Franklin County.
22—Randolph County.
141—Jefferson-Hamilton County.
361—LaSalle County.
20—Perry County.

The Committee furnished newspaper publicity as follows concerning these county medical programs:

45—Madison County.
41—Franklin County.
50—Whiteside County.
60—Jefferson-Hamilton County.
115—LaSalle County.
27—Perry County.
94—Chicago Woman's Club and the Women Physicians of Chicago in their Navy Pier Health programs.

This same service is offered all county medical societies and has proven very beneficial to societies now using it. This is a splendid means of keeping your county organization before the public and holding the interest of the editors of your papers.

MISCELLANEOUS CONTACTS

The Public Health Chairman of the Illinois Federation of Women's Clubs submitted to the Committee her plan for health work during the year. This was approved and copies were mimeographed in the office of the Committee for the clubs in the first ten districts of the Federation.

Material has been compiled and mimeographed for the Woman's Auxiliary.

The Committee was represented at a conference on high school health programs sponsored by the Illinois Congress of Parents and Teachers.

Two series of popular programs have been arranged for Central Y. M. C. A. of Chicago.

The Committee wishes to call attention again to the material which is available in its Chicago office, copies of radio talks may be secured for local use, package libraries on all popular health topics will be loaned physicians, material for use in local newspapers is already prepared and approved for publication.

Respectfully submitted,
JEAN MCARTHUR, Secretary.

"HEAVY WATER" AND TUMOR GROWTH

The experiments of William H. Woglom and Lawrence A. Weber, New York (*Journal A. M. A.*, April 21, 1934), with sixty mice indicate that deuterium, in the amounts that it was possible to administer as "heavy water," had no demonstrable effect on the growth of mouse sarcoma 180 or mouse carcinoma 63. In order to be certain that the deuterium had been absorbed by the mice and by their tumors, the proportion of deuterium to normal hydrogen in the water that these contained was determined by measuring its refractive index.

STANDARD TREATMENT OF PROCEDURE IN EARLY SYPHILIS: RÉSUMÉ OF MODERN PRINCIPLES

John H. Stokes, Philadelphia; Harold N. Cole, Cleveland; Joseph Earle Moore, Baltimore; Paul A. O'Leary, Rochester, Minn., and Udo J Wile, Ann Arbor, Mich., for the cooperating clinics, and Thomas Parran, Jr., Albany, N. Y., and R. A. Vonderlehr and Lida J. Usilton, Washington, D. C., for the United States Health Service (*Journal A. M. A.*, April 21, 1934), collaborate in a presentation of a uniform type of procedure in the treatment of early syphilis which is the product of a genuinely massive investigation of world-wide scope, sponsored by the League of Nations Health Organization and carried through in the United States by the combined efforts of the United States Public Health Service and a group of five university clinics aided by the generosity of several donors. The material embraces the records of 75,000 cases of syphilis, of which 3,244 were examples of early syphilis followed for six months or more, and 383 followed for as long a period as five years or more. These figures, while not in themselves impressive, express an aggregate material larger than any as yet fully evaluated in the literature and are entirely capable of serving as a basis for a definition of the aims and methods of modern effective treatment for early syphilis. The time covered ranges from 1916 to 1931 for the collection of the cases, and twenty months for the study of the records, so that the period embraces essentially that of modern syphilologic practice, and its conclusions may be accepted as applicable to the work of today.

MONILIASIS OF THE SKIN IN DIABETES

E. T. Traut, Cleveland White and R. B. Hemphill, Chicago (*Journal A. M. A.*, April 21, 1934), present two cases of diabetes complicated by infection with Monilia. The first patient received the usual fungicides without improvement; instead, the condition became much aggravated. The allergic constitution previously manifested by urticaria and the precocious endarteritis probably contributed to the severity of the fungous disease. The second, older, patient also had a predisposing obliterating endarteritis. This patient showed the "id" reaction to the fungous toxin about the eyebrows. He had received no treatment prior to admission to the hospital. Both patients responded rapidly to competent diabetic management without local fungicidal medication. Therefore competent diabetic management seems to be the deciding factor in the treatment of Monilia infection of the skin in cases of diabetes.

ANTIDOTE FOR ACUTE MERCURY POISONING

Sanford M. Rosenthal, Washington, D. C. (*Journal A. M. A.*, April 21, 1934), used sodium formaldehyde sulphoxylate as an antidote in twelve dogs, nine of which were saved from a fatal oral dose of corrosive mercuric chloride, when administered by mouth and intravenously within an hour and a half after the poison had been taken. The nine surviving animals

were protected against kidney damage, as shown by the lack of elevation of the blood nonprotein nitrogen. In the dogs that succumbed following this therapy or following intravenous therapy only, no significant renal lesions were demonstrable histologically. The author employed this therapy in ten cases of corrosive mercuric chloride poisoning in human beings. The results have been confirmatory of the experimental observations. The fact that no fatalities and no appreciable kidney damage occurred in any of these cases is suggestive of the value of the therapy in view of a mortality of approximately 25 per cent as reported by recent investigators and with renal injury occurring in a further percentage of the survivors. However, it is usually impossible to know the amount of mercury absorbed by these patients, and final conclusion can be drawn only from an extensive series of cases.

JEFFERSON HEALTH LEADER OF HIS TIME

New York City, April 13.—Thomas Jefferson was praised here today as the "father of vaccination practice in America" by Samuel L. Antonow, president of the American Druggists Syndicate Fellowship, on the 181st anniversary of the birth of the third president of the United States (April 13th).

"Vaccination was first applied by Dr. Edward Jenner in 1789 for smallpox," Mr. Antonow stated. "A dozen years later, shortly after ascending the presidency in 1801, President Jefferson caused members of his family to be vaccinated, thus throwing in his influence with medical progressives of his time. For this, he was attacked by his political enemies as a "maniacal innovator" and criticized as a dangerous radical, much as President Roosevelt and his New Deal are criticized today in some quarters.

"Busy man that he was, Jefferson found time to carry on correspondence with Jenner and other medical leaders of his time and to preach the doctrine of immunization. When a delegation of Indians called on him, Jefferson not only had them vaccinated, but entrusted to their leader, Chief Little Turtle of the Miamis, a supply of vaccine for the members of his tribe. Shipments of virus came to him and he distributed them far and wide."

PULMONARY MONILIASIS

Henry J. Bakst, J. Beach Hazard and John A. Foley, Boston (*Journal A. M. A.*, April 14, 1934), observed three cases of pulmonary moniliasis, one being an infection secondary to pulmonary tuberculosis; the other two were primary infections. A marked variation in the clinical picture of pulmonary moniliasis was observed. Excellent results were obtained with the use of iodides and with iodides supplemented by vaccine in the teatment of the cases of primary infection. There are means of demonstrating the relationship of Monilia recovered from the sputum to the disease process in the patient. Agglutination reactions proved to be of uncertain value in the establishment of a diagnosis. It is important to consider a diagnosis of pulmonary moniliasis in cases of unproved and atypical tuberculosis. The authors suggest that, in the wide group of cases clinically classified as chronic bronchitis, Monilia should be considered as one of the many possible etiologic agents.

STAPHYLOCOCCUS TOXOID IN TREATMENT OF PUSTULAR DERMATOSES

Daniel J. Kindel, Cincinnati, and Maurice J. Costello, New York (*Journal A. M. A.*, April 21, 1934), treated forty-two patients with pustular dermatoses including twenty-eight cases of acne vulgaris, eight of sycosis vulgaris and six of furunculosis with staphylococcus toxoid. No patient received less than 2 cc. total dosage, the maximum being 15.5 cc.; the average was 6.5 cc. per case. Of the forty-two cases, eight were slightly improved and thirty-four were unimproved or worse at the end of treatment. Furuncles developed in two cases after large doses of toxoid had been administered. The authors believe that although their series of cases is small, the results appeared to be so definitely unsatisfactory that continuation of this method of treatment seemed unwarranted and that caution should be exercised in becoming overenthusiastic about the value of staphylococcus toxoid until further reports confirm or deny their observations.

DEVELOPMENT OF TETANUS ANTITOXIN FOLLOWING ADMINISTRATION OF TETANUS TOXOID

P. A. T. Sneath, Toronto, Ont. (*Journal A. M. A.*, April 21, 1934), states that of twenty-nine persons given three doses of tetanus toxoid, significant amounts of antitoxin developed in twenty-eight, a titer of at least 0.1 unit per cubic centimeter of serum being reached in the majority, or twenty. From five to seven months after the last dose there was, in general, a reduction in the antitoxin level, but twenty-seven still showed demonstrable antitoxin, the majority, twenty-five, showing 0.01 unit or more. This is further evidence that active immunization with tetanus toxoid might be adopted advantageously by certain groups in whom the hazard of tetanus is greater than in the general population.

LAYMEN IN MEDICINE EXCEED M. D.'s

More laymen make their living directly or indirectly from the practice of medicine than do physicians, states Dr. Thomas Parran, statistician of the Metropolitan Life Insurance Company. Only 29 per cent. of the medical dollar ever reaches the pocket of the doctor. There are in the United States, actively practicing, some 142,000 doctors, about 21,000 of them connected with medical institutions, the rest in private practice.

At the same time, in hospitals and other medical institutions, or engaged in the sale of commodities to the profession, there are somewhat more than 509,000 other persons.

ALL WET

Pedagog—"Name the constituents of quartz."

His Father's Son—"Pints."—*The Bulletin (Sydney, Australia).*

Original Articles

THE HISTORICAL DEVELOPMENT OF THE DIAGNOSIS OF HEART DISEASE

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The historical development of the present knowledge and recognition of the diseases of the heart and vascular system is the result of three avenues of investigation, anatomical, physiological and clinical, and often through a co-ordination of all three forms of scientific approach.

Around the heroic figure of Vesalius and his school of anatomy at the University of Padua in the 16th Century is centered the beginnings of our knowledge of the anatomic structure of the heart and the larger blood vessels.

The student of medicine today who recognizes the name of Vesalius only in association with a small foramen in the base of the skull, can hardly realize that it is to his great genius we owe the entire scheme of human anatomy, as a study involving accuracy of observation and description.

The further knowledge of the heart and its disorders was advanced more particularly by the teachings of his followers, Fallopius and Fabricius, and perhaps greater in some phases, by that of the distinguished Florentine painter, Leonardo di Vinci, the creator of artistic anatomy and anatomical illustrations. He made excellent drawings of the cardiac valves, vessels and muscles, and gave the first description of the auriculoventricular bundle.

The outstanding figure of the succeeding 17th Century, and particularly in the history of the circulatory diseases, was William Harvey who by the discovery of the circulation reaped the heritage of the new anatomy developed under the stimulating influence of Fabricius at Padua.

Osler, in his Harveyian oration in 1906 before the Royal College of Physicians of London, refers to the first announcement of this epochal event in these words, "At ten o'clock on a bright spring morning, April 17, 1616, an unusually large company was attracted to the new Anatomical Theatre of the Physicians' College on Amen Street. The second Lumlein Lecture was to be given that year by a new man, and rumors had spread abroad about strange views to be propounded by the lecturer."

The silver tipped pointer and charts used by Harvey on that occasion are among the treasured possessions of the College today.

It is interesting to note that the mechanism of events of the heart's cycle and their analysis expounded on that April morning in 1616 has remained unchanged after more than 300 years of continued critical study.

The particular application of this new knowledge in the practice of medicine was evident then as it is now. Furthermore, the work of Harvey was a transition into the full current of essentially modern laboratory experimentation with extraordinary leaps forward into the medicine of the future.

Although the discovery of the circulation was announced in 1616, the publication of "Anatomical Disquistion of the Motion of the Heart and Blood Vessels in Animals," was not until twelve years later, in 1628.

The many commemorative exercises connected with the 300th anniversary of the publication of Harvey's work in 1928, directed the attention of the medical world to the tremendous importance of this physician's contribution toward the progress of our knowledge of the circulation.

The outcome of Harvey's demonstrations covers many of the most important advances made in recent medicine, and does but confirm his position as the founder of modern experimental physiology and one of the great leaders of European thought.

In the middle of the 17th Century medical science found a new pair of glasses in the discovery of the microscope by the Dutch clock maker, Antony VanLeewenhoek. This enabled Malpighi in 1660 to demonstrate the capillaries in the tissues of the lungs, and supplied the completing link in the circulation of the blood, that Harvey recognized but was unable to demonstrate by means available in his investigations.

A century goes by before another epochal contribution is made to the diagnosis of diseases of the heart, when in 1761 Leopold Auenbrugger of Vienna published his "Inventum Novum" containing the discovery of thoracic percussion. This fundamental contribution to physical diagnosis was largely ignored by the profession until one

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year before Auenbrugger's death, when in 1808 it was translated from the Latin under the title "Nouvelle Methode" by Jean Nicolas Corvisart of Paris, who gave to this discovery its rightful place in modern medicine. The torch which Auenbrugger kindled, Corvisart re-lit for all futurity.

The role of pathfinder in diagnosis of heart disease and the entire field of internal medicine, is accorded to that brilliant product of the early French school (René Theophile Hyacinthe), Laennec, a native of Brittany whose name was immortalized by the invention of the stethoscope in 1819, and the discovery of mediate ausculattion.

Laennec was the favorite pupil of Bichat the anatomist, and Corvisart the cardiologist, who was also Napoleon's physician.

The opportunity came after he was appointed to the Necker hospital in Paris in 1816, where during the year he was consulted by a young woman suffering with heart disease. He was puzzled how to proceed with the examination, as the patient was too stout to permit of thumping the chest, and he could not place his ear to the chest because she was still young. In his dilemma he happened to recollect a fact in physics, and acting on this idea he rolled a quire of paper into a cylinder, applied one end to the region of the patient's heart and the other to his ear. Such was the first stethoscope, and for the first time a sick organ murmured its tale of woe into the ear of a great and sympathetic physician, and auscultation in physical diagnosis came into being.

We might dwell at length on this interesting personality, who labored under great difficulties, the victim of chronic pulmonary tuberculosis, yet it can well be said that Laennec with his stethoscope and the study of disease at the bedside and in the postmortem room, practically created clinical medicine as we know it today.

It had its immediate outcome in the brilliant clinicians in Ireland, England, Scotland and across the sea. In the Irish School appeared such leaders as Stokes, Cheyne, Adams, and Corrigan, each name associated with a new clinical observation of diagnostic importance in heart disease.

In 1827 Adams published the first description of heart-block, and in 1828 Stokes by further description established the Adams-Stokes syndrome.

Sir Dominic John Corrigan, M. D., a classmate of Stokes, 1825, University of Edinburgh, in 1832 described aortic insufficiency and originated the Corrigan pulse.

Dr. William Stokes of Dublin will always have a foremost place in Irish medicine. In 1825 he published an "Introduction to the Use of the Stethoscope." In 1827 the "Diagnosis and Treatment of Disease of the Chest," and in 1855 appeared his famous work "Treatise on Diseases of the Heart and Aorta," which will always have a fundamental place in our knowledge of these affections.

The Bichat-Laennac school had its influence on the English physicians of the period particularly on the "Four Great Men of Guys',"—Richard Bright, Thomas Hodgkin, Thomas Addison, James Parkinson, all well known by the diseases which bear their names.

Bright first correlated cardiac hypertrophy with renal disease, and Hodgkin as a contemporary of Corrigan shared in the first description of "Patency of the Aortic Valve."

The school of Louis which followed that of Laennac was the mecca of leading clinicians from across the sea, as the Jacksons, Bowditch, Oliver Wendell Holmes, George Shattuck, James C. Warren of Boston, Alonzo Clark, Austin Flint and Valentine Mott of New York, George M. Norris, Wm. Pepper, W. W. Gerhard, Alfred Stillé of Philadelphia, who in the words of Osler, became the academic progeny of this master, and transferred the principles of his numerical method "to carefully observe facts, carefully collate them, and carefully analyze them, as well as his bright ideals to future generations of American students."

The brilliant internist of the Vienna school, Dr. Joseph Skoda, published in 1839 the first edition of his treatise on percussion and auscultation, which passed through six editions. Skoda classified and clarified the different auscultatory sounds in the chest, and made many distinct contributions to the recognition of heart disease.

The publication by Bamberger of his treatise on heart disease in 1857 was a further distinct contribution of the Vienna school.

Graphic methods for demonstrating the physiology of the heart's action had their origin in the laboratory of Carl Ludwig, who is often referred to as the greatest teacher of physiology of all

time. Of him, Sir Lauder Brunton says "More than to anyone else, since the time of Harvey do we owe our present knowledge of the circulation."

The Dudgeon sphygmograph was the outgrowth of these studies. In the field of pulse tracing or graphic demonstration of the various pulse changes the greatest credit is due to that interesting and brilliant general practitioner Sir James Mackenzie. Probably no one has played a greater part in the advancement of cardiology in the past 35 years. His medical life forms an interesting story. Not specially brilliant as a student he did win a few prizes during his last year at the University of Edinburgh. After serving a year as resident in the Royal Infirmary he entered general practice at Burnley, a factory town in northern England. In the busy life of a general practitioner, his keen mind became centered on two definite objects—first, the understanding of the mechanism of symptoms, and second, the understanding of their prognostic significance. These were the simple resolutions and definite aims which led to the tremendous achievements and great success that came to Mackenzie in later years. He began to study the symptoms of every patient, and an accident directed his attention and special interest to diseases of the heart and circulation.

A woman patient in labor died suddenly of heart failure. This led him to studying the circulatory condition of all women before, during and after pregnancy. He noted particularly pulse irregularities as an abnormal sign and soon recognized two types—dangerous and not dangerous. He began to make pulse tracings by means of the old Dudgeon's sphygmograph of every patient and endeavored to interpret them. Soon he began the study of the venous pulse in the jugulars, which led to the development of the polygraph, by which he was able to make simultaneous tracings of the jugular venous pulse, the carotid pulse, and the apex beat of the heart. The final development was the ink polygraph that bears his name.

By many this discovery is regarded as the greatest contribution that Mackenzie has made to medicine.

Venous pulsations had been studied by others, by Potain in France and Riegel in Germany, but more from an academic viewpoint, while Mackenzie applied his knowledge in a practical way.

He soon noted so-called "missed beats," which he explained as pre-ventricular contractions and named them extra systoles.

Among the dangerous forms of irregularities was a type in which the patient usually died in 5 or 6 years, and all seemed to be victims of heart failure frequently the result of rheumatic fever.

Then there came a patient with mitral stenosis and accompanying congestion of the liver. In auscultation he noted that the pre-systolic murmur was absent,—the thought came to him, that the "auricle had stopped beating." He called this paralysis of the auricle, which is now known as auricular fibrillation.

He noted further that digitalis slowed the fibrillation and relieved the decompensation.

His ideas were not readily accepted by leaders of the profession, and his early papers and writings were refused by leading medical journals. In 1902 he published his book, "Study of the Pulse," which gained great favor in Germany and America long before the giants of the English profession would even glance at it. After a visit to America and Europe, many leaders came to Burnley but not of his own country, so he decided to go to them. At the age of 54 years he moved to London, the first year of which was gloomy, but during the second year there was a miraculous change in the attitude of his professional colleagues. He was elected to Fellowship in the Royal College of Physicians of London.

He was referred to as a wizard which he resented because he regarded his ability to diagnose and prognosticate was due to knowledge of essential symptoms and warned—that no instrument, stethoscope, polygraph, or electrocardiograph, could replace mind and reasoning power of the doctor himself.

He never was enthusiastic about the electrocardiograph, because he thought that enough information could be obtained by other methods, yet the electrocardiograph helped to establish Mackenzie as a wizard, as it proved his tracings and interpretations to be correct.

Soon after the World War began he decided to move to St. Andrews, Scotland, to establish his Institute of Clinical Research. Here he expected to study the early stages of diseases and

discover the significance of such symptoms and ascertain the mechanisms of their production.

After his untimely death in January, 1925, his distinguished disciple, Sir Thomas Lewis, said the greatest of his work "lay in the fact that he so developed and simplified the method of approach as to bring it within the scope of the general practitioner."

About the middle of the last Century, 1856, Köllicker and Müller demonstrated in the experimental laboratory that when a frog's heart is contracted it produces an electric current. This was followed in 1887 by the discovery of A. D. Waller of the "demonstration in man of electromotive changes accompanying the heart's beat."

In 1903, Einthoven of Leyden introduced the string galvanometer to the scientific world. In 1906 the electrocardiograph was first introduced by Sir Thomas Lewis into hospital service in London, and thus clinical electrocardiography had its beginning.

This ushered in a new era in the diagnosis of heart disease, and particularly in the differentiation and interpretation of the arrhythmias, as well as the newer knowledge of coronary artery and myocardial disease.

The development of clinical sphygmomanometry had its beginning with the demonstration of the English rector Hales in 1731, "to determine the arterial blood pressure in horses by observing the height to which the blood columns ascended."

In 1828, Poiseuille determined the same by observing the heights to which the mercury column ascended.

Vierordt introduced his sphygmograph in 1885, Marey in 1876, VonBosch in 1887, and the Riva Rocci instrument began to be used in 1891.

This has gradually given way to the more comfortable wide air filled arm cuffs peculiar to the sphygmomanometers of the present day.

The measurement of arterial blood pressure has become a routine part of every physical examination and has revealed evident cardiac enlargement and heart failure not previously recognized.

The estimation of venous pressure is being more extensively applied in clinical examinations. It is regarded by Eyster and others as an index of cardiac function with particular significance in impending or present cardiac incompetence.

After the discovery of the x-ray by Roentgen in 1895, this method of portraying the heart's silhouette became a part of the physical examination of the heart. Through the development of fluoroscopy, the orthodiagraph and the teleroentgenograph, the fairly accurate determination of the size of the heart in health and disease is possible.

The importance of determining hypertrophy or enlargement of the heart as related to potential myocardial disease is now generally recognized.

The gradual development of instruments of percussion has helped to confirm and evaluate clinical symptoms and to properly correlate various diagnostic phenomena. With advancing knowledge a historical sequence has likewise been maintained in the recognition of the various types of heart disease.

In 1557, Vesalius established the differential diagnosis between thoracic and abdominal aortic aneurism. Vieussons in 1685 contributed the first masterly delineation of aortic stenosis, and in 1715 of mitral stenosis. In 1768 Heberden wrote his classic description of angina pectoris with a report of twenty cases.

The introduction of digitalis by Withering in 1776 had a definite bearing upon diagnosis. In 1835 Graves described the circulatory signs in exophthalmic goiter. While Leonardo da Vinci first illustrated the auriculoventricular bundle in the 16th Century, Purkinje published a more definite description in 1839.

Haller in 1820 was the first to report the irritation to muscles as a stimulant to continuous flow of blood in the heart. The myogenic view of the heart's action was more fully confirmed by the experiments of Gaskell in 1882.

In 1908 Taware discovered the auriculoventricular node, and a year later the sino-auricular node or pacemaker was discovered by Keith and Flack.

The introduction of quinidin by Wenckebach in 1914 for the treatment of certain clinical arrhythmias was of further diagnostic significance.

Osler in his Goulstonian lectures on angina pectoria in 1910 essentially portrayed acute and chronic coronary disease as we understand it today.

An interesting history is connected with our present day knowledge of angina pectoris. First described and named by Heberden in 1768, who by the year 1801 had seen 100 cases. John Hunter's case was diagnosed by Jenner in 1793, who with Hunter was the first to associate angina pectoris with obstruction from hardening of the coronary arteries.

Allan Burns in 1809 expressed the view that the obstruction produced an anemia (anoxemia) of the cardiac muscle, such as obtains in the intermittent claudication of Bouley (1831) and Charcot (1858).

Amyl nitrite therapy was introduced by Lauder-Brunton in 1867. Allbutt and Vasquez made further important contributions to our knowledge of the mechanism of angina. Cardiac asthma was clearly differentiated from angina pectoris by Sir James Mackenzie in 1911.

Coronary thrombosis was first noted by Harvey, again by Jenner, described in detail by Obrastzow in 1910, but definitely defined as a clinical entity by the classic contribution of James B. Herrick in 1912.

Herrick with other American clinicians as Christian, Pardee, Willius, Paul White, Smith, Levine, Conner, Libman, Wearn, Wilson and Sutton, have added a new chapter to internal medicine.

These contributions in coronary thrombosis have likewise greatly advanced our knowledge of myocardial infarction and chronic degenerative heart disease.

In endeavoring to find relief for angina in its various forms, the surgeon has become interested in heart disease, as evidenced by the introduction of cervicothoracic sympathectomy by Jonnesco in 1916 and periarterial sympathectomy by Leriche in 1917. More recently total thyroidectomy in cases of intractable angina and decompensated hearts has been reported by Blumgart and Berlin with encouraging results.

With the wider recognition of heart disease, its incidence as to morbidity and mortality, is progressively increasing. From being the third in mortality ratio in 1900 it has increased to first place at the present time. This is in marked contrast to tuberculosis which was first on the list in 1900, but now has fallen to seventh place.

Several years ago Albert suggested the following reasons, as accounting at least in part for the increase in the number of deaths from heart disease noted during the last thirty years.

1. The increase in the number of persons who live long enough to attain the "heart disease" age.

2. Decrease in the number of deaths from infectious diseases, especially tuberculosis.

3. Old age, which may account for a slightly increasing number of cases that may properly be regarded as resulting from a normal senescent process.

4. Increase in the proportion of the population "maimed" by scarlet fever, acute rheumatic fever, or other infectious diseases who survive such conditions as are likely to lead to heart disease.

Heart disease is, therefore, becoming an important public health problem. We have been accustomed to speak of the great increase in the mortality from heart disease, disregarding the age periods at which these increases have occurred. By analyzing the mortality rates such as those prepared by the American Heart Association, particularly according to age periods, it is seen that almost the entire increase in heart disease mortality has occurred at age 40 and over. The death rates up to age 30 are low. In charts showing percentage changes, the fact is noted that under 5 years of age there has been an actual decline of the heart disease rate in the last ten years of 34 per cent. At ages 5 to 9 there has been a decrease of 27 per cent. Even at ages 10-19 a 23.4 per cent. decline is apparent. These declines seem to reflect the intensified health work with infants, preschool and school children, which has been carried out in the last ten years.

This picture is somewhat upset by the increase at ages 30 to 39 and 40 to 49. In the latter decade there is an increase of 31 per cent. and at 50 to 59 there is a marked increase of 34 per cent.

The hope of lessening the incidence of heart disease in these later periods, is dependent on the recognition of the earliest manifestations of the same. The proper appreciation of this fact will permit the institution of such remedial measures as may modify and limit the tendency to more progressive and serious myocardial damage.

It is distinctly unfortunate that heart disease has become a rather highly specialized field of

medicine, and to some extent taken out of general practice.

The general practitioner by reason of his first contact with cardiac cases and his familiarity with the habits and history of the patient, is able to detect the earliest signs of disease. It is in this direction that preventive medicine will exercise one of its most important functions.

The historical development of our knowledge of the circulatory system and the diagnosis of heart disease, is of basic import and constitutes the most consequential episode in the general development of medicine.

The treatment of heart disorders is on a much better basis than formerly, and an increasing optimism has gone hand in hand with a better knowledge of the natural history of the disease.

EXPERIENCES IN THE TREATMENT OF HYPERTENSION WITH THE X-RAY

JAMES H. HUTTON, M.D.

CHICAGO

Deaths due directly or indirectly to hypertension were said to number about 140,000 annually in the United States a decade ago. Fahr[1] reckoned this as twice the death rate from cancer. This ranks hypertension as one of the major causes of death. It is hoped that the importance of this problem justifies this report of progress in its treatment.

In the past thirty years numerous theories have been proposed as to the etiology of this syndrome. Among them at various times has appeared the idea that it might be due to hyperfunction of the adrenals, particularly the medulla. Recently DeCourcy[2] has published his results in the treatment of hypertension by the surgical removal of two thirds of each adrenal. Involvement of the pituitary in the etiology has been seriously considered, perhaps, only since Cushing[3] published his observations on pituitary basophilism. My own idea that *pituitary and adrenal hyperfunction or dysfunction* is responsible for the syndrome of essential hypertension was set forth in an article in the December, 1933, issue of the ILLINOIS MEDICAL JOURNAL.[4] Evidence to support this idea was gathered from the clinical and experimental fields and from the pathological laboratories and summarized in that article. Since its appearance Dr. J. D. Kirshbaum[5] has told me of six cases observed in Dr. Jaffe's laboratory at the Cook County Hospital. Three cases of uremia, two cases of hypertension and one of hypertension plus diabetes revealed an increase in the number of basophil cells in the anterior lobe of the hypophysis.

Cushing[10] has since reported the observation of a heavy infiltration of basophilic elements in the posterior lobe in six of nine pituitary bodies from fatal cases of eclampsia and in a number of glands from cases of essential or nephrovascular hypertension. He concludes that the source of these hypertensive disorders lies in the posterior lobe of the pituitary body, that the extent of basophilic invasion from the pars intermedia is a measure of posterior lobe activity and that the excessive infiltration by these elements represents the histopathologic basis of eclampsia and essential hypertension in young persons and may possibly be related etiologically to the atherosclerosis of old age.

Hofbauer[11] also has suggested that the posterior lobe of the pituitary is at least partly responsible for eclampsia and its accompanying hypertension.

That article suggested that the x-ray might be used to correct the abnormal function of these two organs with a consequent relief of the hypertension and its accompanying symptoms. It was also suggested that the x-ray might be found useful in the treatment of diabetes by controlling the abnormal function of the pituitary and adrenals thought to be responsible for this condition. Our experience with this condition will be reported in a separate paper. This paper reports our experience in the treatment of hypertension.

The first treatment was administered in October, 1932, to a 31-year old patient in coma from a spontaneous subarachnoid hemorrhage which occurred four years after the discovery of his hypertension. More intensive work was not done until about one year later; i. e., October, 1933. We have had under observation 71 cases of hypertension, mostly of the essential type. Three cases have been reported by physicians in other cities as having responded favorably to this treatment. In addition we have seen nine cases of coexisting diabetes mellitus and hypertension, seven men and two women. Of these three were relieved of both conditions; that is, their gly-

cosuria disappeared and their blood sugar was reduced to normal and the blood pressures are respectively:

Before Treatment	After Treatment	Patient's Age	Sex
215/80	138/65	27	M
252/145	140/80	54	M
200/105	140/85	68	M

In two cases only the hypertension was relieved; the diabetes was not materially affected.

Blood Pressure Before Treatment	Blood Pressure After Treatment	Patient's Age	Patient's Sex
160/90	140/80	46	M
195/100	160/90	84	F

One case, a physician 55 years of age, had his diabetes markedly improved to the extent that he was sugar-free most of the time on a very indifferent diet and the subjective symptoms associated with the hypertension were relieved, but his blood pressure was not significantly reduced. One woman experienced a reduction in blood pressure of 70 on the systolic and 60 on the diastolic but her diabetes was not affected and her subjective symptoms were not greatly relieved. Six report themselves as feeling much better subjectively. Two cases had only one treatment.

Typical records of these cases are as follows:

Mr. A. D., aged 26 years, height 5′ 1″, had diabetes which required a restricted diet and ten units of insulin per day. His bilateral cataracts had been successfully operated on by Dr. Hiram J. Smith before he was referred to me (12/8/33). His blood pressure was then 215/80. He was able to discontinue the use of insulin after two x-ray treatments. His blood pressure, however, was quite resistant to treatment and did not return to normal until March 28, 1934. It was then 138/65. His vision, which was 10% of normal when treatment was started, increased to 50% of normal while he was under treatment. We do not know that the treatment had anything to do with this increase in vision.

Mr. J. H. H., aged 53 years, had diabetes and hypertension since a severe attack of mumps at the age of 45. He complained of severe headaches of almost daily occurrence, occasional diplopia, transient attacks of blindness, vertigo and loss of the power of concentration. He had frequent attacks of diurnal somnolence. Blood pressure was 252/145. He did not take insulin and spilled sugar much of the time. He had been incapacitated more than half the time for several years. His glycosuria disappeared rather promptly after treatment was instituted and has recurred but once since. His blood sugar has been normal for months. He has had in all 13 treatments. His blood pressure, July 13, 1934, was 140/80. He is free from all the complaints which he mentioned when he first came under observation. He has not missed a day's work since the treatment was begun.

The following is a brief resume of 71 cases of hypertension. Some of these were private patients; others were from the Out Patient Department of the Illinois Central Hospital. Several were from the medical service of Dr. LeRoy H. Sloan of the Illinois Central Hospital and a few were contributed by other members of that hospital staff, to all of whom I am indebted for the privilege of including them in this report. Of these, 42 were between the ages of 40 and 60. The others ranged from 19 to 84 years of age. A good many of these patients had no subjective complaints, their hypertension having been discovered in the course of some routine examination. Thirty-two complained of headache, ten of vertigo, fourteen of precordial distress. As stated elsewhere a good many patients mentioned this symptom only when they commented on its disappearance after treatment. Eight listed general weakness and tiredness; seven noted irritability and six complained of lack of endurance and somnolence. Of these 71 cases 54 are definitely improved both as to their subjective complaints and reduction in blood pressure. Seventeen are listed as unimproved. Nine of these have not had sufficient treatment to give the matter a fair trial. Two responded favorably to a few treatments and then discontinued them on their own responsibility. One of these has since died from coronary thrombosis. A post mortem examination was refused. Of the others two are dead. One had cerebrospinal lues and died of an intracranial hemorrhage. He had numerous treatments but without any effect either on his symptoms or his blood pressure readings. A post mortem could not be obtained. The other had a carcinoma of the stomach and should never have received treatment in spite of his hypertension, large sella and choked discs.

The following are a few representative case reports:

Mr. F. H., aged 33 years. His hypertension was discovered at the age of 29. His blood pressure was then 200/140. Headaches were frequent and severe. He was somnolent and easily tired out. September 27, 1932, he had a subarachnoid hemorrhage at which time his blood pressure was 218/144. He was unconscious for a week. Cushing's report on basophilism appeared about this time and so we gave him two small doses of x-ray to the pituitary. He gradually recovered without residual symptoms of the hemorrhage and returned to teaching January 1, 1933. His blood pressure remained below 170/120 for some months, but when the

use of an insulin-free extract of the pancreas was discontinued it slowly rose to 180/130 when he was given further x-ray treatment. His blood pressure promptly dropped to 145/110. His headaches and somnolence disappeared and he reported himself as feeling better than he had for many years. After a number of treatments with a machine not designed for so-called deep x-ray therapy, his blood pressure again rose to 190/140. He was then given heavier doses of the x-ray with a reduction of the blood pressure to 160/115 with a coincident improvement in his sense of well-being. His blood pressure, July 6, 1934, was 158/108. This man has had more treatment than any other patient under our observation. Treatments have been given at various times since September, 1932. He has not received any for some months. His blood pressure has not risen since the last treatment. After some months without treatment there is a return of some subjective symptoms, chiefly fatigability and somnolence. These promptly disappear after one treatment.

Miss M., aged 33 years. Her hypertension was discovered in January, 1933. February 15 the blood pressure was 154/96. In a few months it rose to 190/110. She complained of severe headaches just before the menstrual periods and was tired much of the time. She menstruated too frequently and profusely. She had nine x-ray treatments from October 16, 1933 to April 18, 1934. Her blood pressure was 146/96 on May 9, 1934. It has been about 145/95 most of the time since January 1, 1934. Her headaches, menstrual disorders and fatigability have been corrected.

Mrs. H. S., aged 48 years, had had frequent headaches for seven or eight years. If she leaned back or rocked as in a chair there was a feeling as if a curtain were drawn over her eyes. She had pulmonary tuberculosis two years ago. Blood pressure 252/140. Her blood pressure came down rather promptly to 165/96. Following an emotional strain it went up to 234/126 and came down rather slowly after further treatment. She has had in all 13 treatments. Her blood pressure now is 145/80. She has very little headache and has much more endurance than formerly.

Mrs. C., aged 46 years, complained of nervousness, irritability, insomnia, and of being constantly tired. She was heart conscious much of the time. Blood pressure 170/100. Pulse 100. B. M. R. plus 48%. This was not affected by Lugol's solution. After one treatment on February 6, 1934, her blood pressure dropped to 140/85. She said she was less nervous, less tired and slept better. Subsequently the blood pressure rose to 150/90 and there was some slight increase in nervousness. Another treatment was given on March 8 after which the blood pressure dropped to 134/92. She had another treatment April 12 when the blood pressure was found to be 155/95. All of her presenting symptoms were improved. Following this treatment her blood pressure dropped to 145/90. Her B. M. R. was minus 6%.

Mr. L., aged 50 years. Blood pressure was 160 in 1916, 180-200 in 1927 and 240/130 on December 5, 1933. He complained of severe headaches, weakness, shortness of breath, heart consciousness, precordial distress and attacks of somnolence. He has had eight treatments. His headaches, somnolence and weakness disappeared after the first three treatments. He claims that he can climb five flights of stairs with less shortness of breath than he could previously climb two. April 30, 1934, his blood pressure was 160/95. It has remained about that figure ever since.

Mr. O., aged 41 years, had hypertension for four years, daily headaches on arising, weakness in his legs, cold hands and feet and was easily upset and tired out. Blood pressure April 3, 1934, was 190/125. His glucose tolerance test showed a decline from a fasting level of 101 to 50.4 three hours after taking glucose. He had four treatments up to June 2, 1934, when his blood pressure was 150/98. He reports the relief of most of his subjective symptoms.

Mr. J. K., aged 69 years, was admitted to the hospital March 26, 1934, with a diagnosis of arteriosclerosis, hypertension and hypertensive heart disease. His blood pressure was 190/150. He complained of frontal headaches for two years and of dyspnea on exertion for one year. There was no edema and he complained of no precordial distress. He was a large, heavy man whose physical examination bore out the diagnosis. The urine showed a trace of albumin but no casts. The blood count was essentially negative. The glucose tolerance showed a fasting blood sugar of 88 mg. One hour after 100 grams of glucose it was 190 and at the end of three hours it had declined to 108. The urine was negative throughout the test. His headaches, which were very severe and resistant to medication, were markedly relieved by one x-ray treatment and disappeared entirely before he left the hospital. His blood pressure came down to 145/90. He was discharged from the hospital without headache, with less dyspnea and generally in a very good condition. The x-ray showed his sella to be on the upper limit of normal for size. It was both wide and deep. He was six feet in height, indicating a pituitary that had been abundantly active during his growing years.

UNIMPROVED CASES

Mrs. E. C., aged 63 years, was an old nephritic to whom this treatment was administered by the doctor to satisfy the family. There was no improvement in the blood pressure and no relief of symptoms.

Mr. S. H., a pensioned laborer whom Dr. Olson saw September 21, 1933, had a pulse of 135 and a blood pressure of 224/148. He had a stroke April 3, 1933. He was given two treatments on December 13 and 20, 1933, following which his pressure was 235/120. While he states that he has been feeling well, no subsequent treatments were administered.

Mrs. N. came under observation in 1930 at the age of 39 complaining of hypertension since the birth of her last baby nine months before, obesity, severe headaches occurring near the menstrual period, at which time a drop in blood pressure was noted, a stone in her right kidney, shortness of breath and an old history of peptic ulcer. Blood pressure 175/100. Weight 218½ pounds. Later the blood pressure was 200/110.

It was evidently of the paroxysmal type as it was later down as low as 130/85. X-ray treatments were begun in December, 1933. Her blood pressure continued to fluctuate from 140/80 up to 170/110. She continued to have frequent severe headaches. We believe the failure is due to the fact that she does not get sufficient rays nor treatment at sufficiently frequent intervals.

Mrs. D. E. came under observation in 1931 at the age of 52. She complained of slowing down mentally and physically, gain of twenty pounds in the past year and rheumatism of her knees. Her B. M. R. was recorded as minus 20%. Weight 204 pounds. Blood pressure 165/108. Her blood pressure continued to rise and was 178/100 in January, 1933. She had three x-ray treatments last December. January 12, 1934, her blood pressure was 155/95 and on April 13, 160/85. While she claimed to feel much better, we feel that her hypertension was not proportionally reduced because she did not have sufficient of the rays.

Two additional cases were reported by a physician in a western city.[6] He is himself a victim of hypertension and writes that he is significantly improved in all subjective symptoms while his blood pressure is reduced 50 points on the systolic and 20 on the diastolic side. The other case is a maid in this doctor's family who has been the victim of hypertension for some years. He states that she has experienced a material reduction in blood pressure with relief of her subjective symptoms. A prominent roentgenologist in Philadelphia[7] writes of his case: "I have treated her twice during the past two weeks, apparently with very definite benefit. Yet, I am not sure that this may be in part psychical, but even if it be only psychical it would be worth while."

DISCUSSION

A frequent, if not a characteristic, finding of essential hypertension is a marked difference between the pressures in the two arms. One of the early results of treatment is an equalization of these pressures. After a few treatments the blood pressure becomes extremely labile. To illustrate: Frequently when a patient's blood pressure is first taken it may register as much as 200. If it is taken a second or third time a minute or two later it may register as much as 30 points lower. Undoubtedly the difference in pressures recorded by different observers on the same patient is due to the fact that one records the pressure hurriedly and the other takes a number of readings.

Usually three or four treatments are given at intervals of one week. Treatment is then interrupted for three to four weeks in order to assure ourselves that we do no damage to the skin or hair. Younger patients or those who have had hypertension for a shorter period of time may experience a return to normal figures after one or two treatments. In such cases nothing further is done unless the blood pressure rises again to an abnormal figure. In short, we aim to give the smallest amount possible to relieve the patient. Approximately 100 R units are given to each side of the pituitary and the adrenals at each treatment. In most cases the pituitary and the adrenals are rayed at the same time. However, one girl received treatment only to the pituitary with rather satisfactory results. One man we believe would have been better off if only his adrenals had been rayed at the second sitting. It is my opinion that better results have been obtained in those cases that received treatment with a deep therapy apparatus. The roentgenologists do not agree with this. We use from 120 to 150 K.V. One roentgenologist[7] writes: "I have given through the pituitary region a 10 per cent. surface dose of high voltage x-rays on the machine that I use for this region, that involves 200 K.V., 3 Ma. 5 minutes, in a field 6x6 cm., at a distance of 40 cm., and with 0.5 copper filtration. Over the suprarenal region I also gave a 10 per cent. surface dose, on the machine used for this area, with 200 K.V., 4 Ma. 8 minutes, in a field 12x16 cm. crosswise, 60 cm. distance, with 0.5 copper plus 5 cm. of felt."

The pituitary and adrenals are so closely interrelated that it is usually impossible to tell which is the primary and chief offender. Frequently the sella turcica is quite large but considered by the roentgenologist to be within normal limits. An excess of calcium is often present about either the anterior or, more frequently, the posterior clinoid processes. There is sometimes a smudge of this material within the sella itself. We do not know the significance of these observations, but are convinced that patients exhibiting such a sella offer a better prognosis as to treatment than do patients exhibiting a small or entirely normal appearing sella. It may be that these large sellae occur in cases where the pituitary is the primary offender. Treatment to the pituitary alone might settle this point. I have just stated that it has been done in one case with very good results. On the other hand, the small sella might

point to the adrenals as the chief offender. As a matter of fact there is some clinical evidence of this and work is now being undertaken to determine whether this is so. A physician in a western state,[6] himself a victim of hypertension, had his own adrenals rayed with much heavier doses than we use. He writes that he experienced considerable symptomatic relief and a notable reduction in blood pressure from two treatments.

Most of these cases have been ambulatory. They are worked up at the office and if no contraindication is found are sent to the laboratory for treatment. They return for observation one week later. By that time most patients show a considerable reduction after the first treatment. Subsequently there is a rise in blood pressure almost but not quite to the original level. This declines rather slowly and not at a constant rate under subsequent treatment. A few cases have shown a considerable increase in blood pressure after treatment. One physician, for example, started with a blood pressure of 160/120 which increased after each of three treatments until it stood at 200/140. The fourth treatment, applied to the adrenals only, was followed by a rapid fall in blood pressure to 140/90. This fall in pressure was accompanied by some unpleasant symptoms—weakness, shortness of breath, sweating, drowsiness. He has had no further treatment and his blood pressure remains at about 140/100. He states that he feels very much better than before treatment was started in that he is free from precordial distress, is less irritable, is able to work more easily and has more physical endurance. The arteries in his lower limbs were sclerotic to the extent that they were plainly visible in x-ray films up to his groin. His father was a victim of Buerger's disease and he considers himself in the early stages of it. A few patients have shown a temporary rise lasting about 72 hours after the first treatment.

Some symptomatic changes occur quite promptly. For example, one physician who had been subject to vertigo for five years and was quite dizzy when he got on the table for his first treatment, stated that his vertigo disappeared in the course of that treatment and did not return for three weeks when he was in quite a serious accident. A good many patients say that they feel remarkably clear-headed and able to work more easily and to better advantage shortly after treatment is started. Another interesting change is an increase in physical endurance.

At least two patients past 50 years of age have stated that there was relief from their sexual impotence. Whether this is a temporary or a permanent affair remains to be seen. Dr. Culpepper[8] tells of a case in which definite paranoid tendencies associated with hypertension were relieved coincident with the reduction of the hypertension by the x-ray.

The fact that the blood pressure frequently falls so promptly and markedly after small doses of the x-ray raises the question whether the organism is at first very sensitive to the ray and later acquires some tolerance for it so that the fall following subsequent treatments is less rapid.

Mr. R. H., 50 years of age, weighing 238 pounds, had a blood pressure of 190/150. After the first three treatments his blood pressure dropped to 160/105. After this it rose to 230/134 and has declined under subsequent treatments only to 178/112. It is likely that the x-ray exerts some regulatory influence on these organs as the blood pressure does not fall when it is at or near normal levels. This is noted particularly in the diabetics who experience no reduction in their blood pressure.

Before treatment is instituted the patient should be given the benefit of a careful physical examination, a urine analysis and a determination of the specific gravity at 2-hour intervals. A glucose tolerance test should be done and if convenient the basal metalolic rate should be determined.

The glucose tolerance test furnishes some idea as to the likelihood of the patient's responding favorably to treatment. It was O'Hare's[9] idea that this test served to separate the nephritic from the non-nephritic type of hypertension. Those exhibiting a very high sugar curve offer a more favorable prognosis than those who do not. We have done a glucose tolerance test on 18 patients, 11 of whom had a rise of blood sugar to 190 or more. In a number the blood sugar rose to 250. Most of these exhibited a high renal threshold so that when the blood sugar rose to 190 or more there was no glycosuria. We have seen several cases that had an inverted type of sugar curve. The blood sugar rose slightly or not at all after the ingestion of glucose and at the end of three hours was much lower than in the fasting state. The significance of such a curve we do not know. While we have gotten very good

results in these cases, they are more difficult to handle and need to be watched more closely.

Contraindications. Severe generalized arteriosclerosis should probably be regarded as a relative contraindication. While we have given the treatment to one woman aged 84 whose hypertension was corrected and a man aged 79 who experienced a fall of 70 points in blood pressure and relief of his precordial distress and anginal attacks, yet in most instances severe arteriosclerosis should probably be sufficient to rule out this treatment. Nephritis should at this time be regarded as an absolute contraindication. While in the doses we use, the ray undoubtedly does not damage the kidney, it is likely that nephritis and a coexisting hypertension are in some way dependent upon each other so that a marked reduction in pressure would probably not be to the patient's advantage. Myocarditis and cardiac decompensation probably do not contraindicate this treatment, but should cause one to approach the case with more than the usual degree of caution. Angina pectoris is not a contraindication. We have treated five cases who were said to have had a coronary lesion. All report themselves as feeling better. In four the blood pressure is down to nearly normal and they seem to have much more endurance. The fifth, a physician, has had only a few treatments. He reports considerable subjective improvement and his blood pressure is notably reduced but it is too soon to know what the final result will be.

We have had no bad results—no burns, no loss of hair, no pituitary or adrenal insufficiency. A few patients have vomited after receiving the x-ray treatment. This should be a warning and cause one to proceed with great caution; it does not necessarily mean that treatment should be permanently discontinued.

The following shows a course of treatment as administered to the patient whose case history is given briefly:

Case History

He is a man 52 years of age, six feet in height, weighing 216 pounds. He came under observation January 22 with a blood pressure of 230/130. There were no pathological findings in his urine and his blood chemistry was normal. He complained of headaches, chiefly in the occiput, weakness of his legs and frequency of urination. The significant physical findings were the high blood pressure, a pitting edema extending almost to his knees, contracted pupils and very sluggish tendon reflexes. He had been told that his trouble was due to cerebrospinal lues and in spite of the negative blood and spinal fluid Wassermann, a healthy family and no history of syphilis, he had been under intensive antiluetic treatment for one year.

After the first x-ray treatment his blood pressure dropped to 160/90 and his headache, which had been almost constant for several years, disappeared within three days. Much of his weakness disappeared and there was considerable lessening of his edema. Subsequently there was a rise in blood pressure to 200/125. Under subsequent treatments his blood pressure has dropped to 178/92. After a severe mental strain of one month his blood pressure was 195/100 but there was no return of his headache and other symptoms.

In a few instances we have used 150 kilovolts with ¼ mm. of copper and 1 mm. of aluminum. It is my impression that some cases respond better to this than to the lighter voltage.

The symptomatic relief of most patients is very

Sex	Age	Blood Pressure Before	No. of Treatments	Blood Pressure Afterward	Remarks
M	41	190/125	7	150/98	Headache relieved. Strength and endurance improved.
M	53	210/120	5	140/90	Marked improvement. Returned to duty after being laid off 1 yr. because of high blood pressure.
M	58	210/150	9	158/120	Headache and vertigo relieved; vision improved.
M	69	190/150	1	145/90	Headache and dyspnea relieved.
M	52	230/130	12	178/92	Headache and precordial distress relieved; more strength and endurance.
F	53	190/110	4	140/80	Headache and choking spells relieved.
F	55	230/130	5	165/88	Precordial distress, headache and dyspnea relieved.

Date	Area	KVM	Port	Fil.	STD	Ma.	T	MAM	RU
2-1-34	Adrenals	120	15x15	2 al.	50 cm.	5	10	50	133
2-1-34	L. side pit	120	10x10	2 al.	50 cm.	5	8	40	106.4
2-1-34	R. side pit.	120	10x10	2 al.	50 cm.	5	8	40	106.4
2-8-34	Adrenals	120	15x15	2 al.	50 cm.	5	10	50	133
2-8-34	L. side pit	120	10x10	2 al.	50 cm.	5	8	40	106.4
2-8-34	R. side pit.	120	10x10	2 al.	50 cm.	5	8	40	106.4
2-15-34	L. side pit.	120	10x10	2 al.	50 cm.	5	8	40	106.4
2-15-34	R. side pit.	120	10x10	2 al.	50 cm.	5	8	40	106.4
2-15-34	Adrenals	120	15x15	2 al.	50 cm.	5	10	50	133
2-21-34	Adrenals	120	15x15	2 al.	50 cm.	5	10	50	133
2-21-34	L. side pit.	120	10x10	2 al.	50 cm.	5	8	40	106.4
2-21-34	R. side pit	120	10x10	2 al.	50 cm.	5	8	40	106.4

striking. They frequently state that there is shortly relief of headache and dizziness, disappearance of precordial distress and an increase in their physical strength and endurance. The following are typical cases:

The roentgenologist should not be saddled with the entire responsibility for the treatment and supervision of these patients. They should be seen regularly by a competent doctor who should watch them much more closely than he does the ordinary case of hypertension. He should see them at least once a week and note the blood pressure, the pulse rate, the condition of the urine and the general condition of the patient. It should be remembered that the x-ray is a very powerful agency capable of doing a great deal of damage. If this treatment is attempted by lay technicians without competent medical supervision undoubtedly some patients will be hurt. However, the symptomatic relief afforded by it and the reduction in blood pressure accompanying it in the majority of cases seems sufficient to warrant calling it to the attention of the profession for further study.

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PROGNOSIS IN HEART DISEASE

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The traditional uncertainty of life in the presence of organic heart disease has always surrounded the cardiopathic subject with an aura of tragic potentiae in the eyes of his physician. The parodox of this situation exists in the fact that while some of the time honored signs of heart disease still held in unwarranted awe, are now known to be comparatively incapable of producing sudden death or even serious functional incapacity, on the other hand many extremely treacherous conditions may remain unrecognized and unheeded in their clinical incipiency. Adequate clarification of this situation may be sought through the following channels:

1. Careful etiologic classification of every case of heart disease.
2. Application of accumulated knowledge concerning the morbid tendency of each particular type.
3. Proper appreciation of the early subjective expression of myocardial and coronary disease.
4. Application of certain objective criteria which designate the truly pathologic heart.
5. Recognition of certain symptoms and signs known to be of grave prognostic significance.
6. Consideration of the constitutional type, heredity and habits of living in the individual case.

This discussion will deal particularly with the relationship of etiology and of early clinical recognition to the prognosis of heart disease. It is in the early stages of cardiac incapacity that prompt readjustment of living and effective management offer the greatest possibilities of clinical response and life expectancy. Life expectancy is largely dependent upon the condition of the myocardium, and after middle life the degree to which its nutritional integrity is affected by coronary sclerosis.

Heart disease in the earlier decades of life, following as it does in the wake of rheumatic disease, promises to be in greater abeyance as hygienic conditions in crowded centers improve; as greater understanding of infant nutrition and child hygiene develops through health education; and finally as the problem of the relationship of acute and chronic upper respiratory infections to the rheumatic syndrome approach solution.

That we shall not have fulfilled our entire measure of duty by prophylactic endeavors at the threshold of life is quite apparent. We must continue to give our unfaltering attention to the study of cardio-vascular disease during and after middle age, where especially are the ravages of cardiovascular deterioration so marked and widespread. The captain of this legion of cardiovascular failure is unquestionably hyper-

tension with its host of cardiac, vascular and renal complications and sequelae.

Richard Cabot[1] in his survey of over 1900 cardiac cases coming to autopsy from the medical service of the Massachusetts General Hospital, found that 77 per cent. of them were due to the effect of hypertensive disease. Well over half of all hypertensive subjects die cardiac deaths, the remainder terminating by cerebral hemorrhage or uremia. Naturally pneumonia, diabetes, malignancy, and other intercurrent diseases take their usual toll.

Full consideration of the problem of cardiovascular disease must include not only the morbid states of the heart and great vessels but of the entire vascular tree as well.

Certain morbid vascular conditions form the background for cardiac disease, such as the hypertrophied heart evolving upon the long continued strain of vascular hypertension. Coronary disease in both its occlusive and anginal expressions is a cardiac manifestation of general vascular sclerosis.

The Etiology of Heart Disease: Development of the etiological concept of heart disease is probably one of the most significant trends of present day cardiology. In a previous paper* read ent day cardiology. In a previous paper read before the Missouri State Medical Association in May, 1929, we called attention to the importance of this consideration as essential to comprehensive diagnosis, prognosis and treatment of heart disease. A simple outline was presented classifying organic heart disease etiologically as follows: 1. Congenital; 2. Rheumatic carditis; 3. Bacterial endocarditis; 4. Thyrotoxic heart disease; 5. Syphilitic cardiovascular disease; 6. Hypertensive cardiovascular disease; 7. Degenerative cardiac states associated with general systemic conditions, such as arteriosclerosis producing angina and coronary occlusion; infectious diseases or foci of infection producing toxic myocardial changes; and finally cardiopathic states associated with emphysema diabetes, nephritis, anemia, etc.

The importance of striving to arrive at a definite etiologic diagnosis was stressed, with discussion of the factors helpful in determining it. Avoidance of such indefinite and etiologically unqualified terms as "mitral regurgitation" or "myocarditis," should tend to crystallize our concept of heart disease. It would seem desirable to qualify such diagnoses from an etiologic standpoint, which can frequently be done by carefully analyzing the history of past diseases, and making a comprehensive physical examination, so as to obtain evidence of any collateral systemic disease known to have cardiovascular complications. Laboratory, electrocardiographic and roentgen ray studies naturally contribute their part to a complete etiologic survey.

If we are to recognize heart disease in its earliest manifestations, when the prognosis is best, we must be alertly familiar with its clinical causes. Complete cardiac diagnosis should in every case be qualified by an etiologic diagnosis as nearly as it is possible to designate. The present day tendency is to lay more stress upon etiology, functional capacity and subjective symptomatology and less upon the physical features of certain murmurs, arrhythmias, etc., except where they are of etiologic or prognostic significance. We are in accordance with Willius[2] in considering the prognosis of heart disease dependant principally upon the etiologic factor concerned.

SPECIFIC INFLUENCE OF ETIOLOGY ON PROGNOSIS

Congential Heart Disease: Congenital heart disease is compartively rare after early infancy where it shows its highest mortality. Incomplete or absent septa, pulmonary stenosis, atresia of the aorta and right ventricle, are the most frequent autopsy findings and are usually difficult to diagnose with accuracy during life. When they do not cause early cardiac death, the cases frequently terminate in childhood or early youth, form some intercurrent malady. In older children, symptoms of readily produced or constant cyanosis, retardation of growth and physical signs of circulatory distress are the most important factors influencing prognosis, which may be rendered more favorable by early diagnosis with institution of appropriate measures to safeguard the child, such as regulation of effort, careful nutritional control and avoidance of fatigue and acute respiratory infections to which they are usually susceptible. If a child with a developmental cardiac abnormality survives the first seven or eight years of life, he has a prognosis equivalent to or even better than a child with a healed rheumatic endocarditis, showing a similar response to effort. They stand equal chances of superimposed bacterial endocarditis later in life.

We must differentiate between actual symptomatic congenital disease and the asymptomatic type in which the lesion is merely an anatomic landmark, with an entirely adequate functional capacity.

Rheumatic Carditis: The immediate prognosis of acute rheumatic carditis is favorable, the mortality and liability to permanent cardiac damage diminishing with each decade, being highest in early childhood. Recurrent attacks increase the probability of permanent damage. As the myocardial involvement usually resolves rather completely, the ultimate prognosis of a healed rheumatic valvular lesion is usually determined by the degree of valvular stenosis produced. The compensation of such a damaged heart is roughly indicated by its capacity to meet the ordinary demands of everyday life. Ultimately congestive failure usually makes its appearance. The prognosis of the earlier decompensatory episodes is better than decompensation occurring in any other type of heart failure, except that of the surgically treated thyrotoxic type. Later in life the factor of superimposed myocardial and coronary changes renders the restoral of functional capacity more uncertain.

Cabot[1] found that less than half his cases of healed rheumatic endocarditis died of congestive heart failure per se. Mitral disease is compatible with long life and if the patient gets beyond the second decade, his valvular lesion is often not the cause of death. Intercurrent infection, trauma and other incidental diseases are just as likely to cause death ultimately as is the heart condition itself. Furthermore, superimposed cardiac conditions such as hypertensive or coronary disease sometimes terminate the picture. The possibility of superimposed bacterial endocarditis must always qualify too optimistic a prognosis on even a slight, well compensated mitral stenosis. The experienced clinician is careful to eliminate all foci of infection, as well as undue sources of fatigue or exposure.

Thrombosis in the auricular appendages occurs in about a quarter of the decompensated fibrillating cases. Parts of this thrombus are sometimes broken loose and form emboli in the peripheral circulation such as the leg, brain, or spleen. Pulmonary infactions from right atrial thrombosis are frequently encountered.

Another lesion sometimes occurring with rheumatic history, found principally in males and manifesting itself later in life, is aortic stenosis. This is to be considered rheumatic where syphilitic cardiovascular disease can be definitely ruled out. While there is considerable evidence that rheumatic fever is at least closely associated with streptococcal infection, no single specific strain has as yet been proven to be the etiological agent. The large volume of evidence suggests that the disease is one of hypersensitiveness to the products of streptococci.

Bacterial Endocarditis: Actual bacterial endocarditis presents a very different prognosis than rheumatic endocarditis, upon which it is frequently superimposed. The subacute type is usually caused by the streptococcus viridans but occasionally by the influenza bacillus and usually terminates fatally in from three to eight months. Bacterial endocarditis may occur as a terminal factor in a fatal streptococcal, staphlococcal, pneumococcal or gonococcal septicemia.

The Problem of the Systolic Murmur: Systolic apical murmurs have no prognostic significance except that of the type of heart disease with which they are associated. When not caused by bacterial endocarditis or rheumatism, in which latter case they are always accompanied by some degree of stenosis, they may be associated with myocardial or coronary disease. If these etiological factors can be ruled out and no other evidence of organic heart disease, such as enlargement, thrills and second sound accentuations be present, we may term the murmur functional. Normal individuals often have faint systolic murmurs, and even moderately loud functional types may be produced by cardiac over-activity associated with hyperthyroidism, fever and anemia.

The systolic murmur over the aortis area, more frequently encountered in those past middle life, when not due to aortic stenosis, is usually associated with a dilated, inelastic atherosclerotic proximal aorta. There is an interesting problem presented by this phenomenon, that may be of prognostic significance in the possible association of this murmur with coronary sclerosis. Scott[3] reports an interesting anatomical finding called to his attention by Professor Erdheim, who pointed out that the first few centimeters of the aorta are singularly free of atheomatous changes in individuals who attain seventy years or more, although the remainder of the aorta may be quite atheromatous. On the other hand,

marked involvement of the first three or four centimeters appeared to be incompatible with the attainment of this age. Exceptions to this rule were very rare. In searching for some explanation of this fact, one is reminded of the evidence indicating that the first part of the aorta is nourished by the coronaries, so that it appears possible for some relationship to exist between coronary disease and sclerosis of the proximal portion of the aorta, which is involved in the production of this systolic aortic murmur. Hence its potential prognostic significance. We have been carefully recording the presence and intensity of this type of murmur for the past year, but the significance of such data will naturally take some years to realize.

The Thyrotoxic Heart: The occurrence of thyrotoxic heart disease will naturally be increased in the districts where endemic goiter is especially prevalent. The patient, often middle aged or even elderly, may have been going along for years with a small, perhaps unnoticed adenoma with no profound symptoms except nervousness and palpitation, with mild breathlessness on effort, until its ultimate effect upon the myocardium has been such as to produce congestive failure. These cases are frequently diagnosed as "myocarditis" and treated with rest and digitalis, with little or no benefit.

Clinically these cases present the picture of an overly stimulated, disproportionately rapid and usually irregular heart, often not greatly increased in size. Subjective and objective evidence of hyperthyroidism, such as increasing heat sensitiveness, tremulous warm moist hands, good appetite with loss of weight and a nodule in the thyroid can usually be elicited by careful search. Bedside evidence is all important since metabolism readings may be greatly affected by the presence of dyspnea. It is astonishing what profound thyrotoxic effect can be wrought by a practically unnoticeable nodule of the gland. There is nearly always auricular fibrillation present in advanced thyrotoxic cases. In fact where mitral stenosis can be ruled out with reasonable assurance (sometimes difficult in fibrillation), the next etiologic probability is hyperthyroidism. Some of the most gratifying results in clinical medicine are obtained from combined medical and surgical treatment of even advanced cases of thyrotoxic heart disease. Blumgart, Levine and Berlin[4] have recently reported relief of congestive heart failure and also angina pectoris by total removal of normal thyroids. The explanation lies in reduction of the metabolic rate, thus lightening the cardiac load.

Cardio-Vascular Syphilis: Practically all the lesions of cardio-vascular syphilis begin in the aorta and are manifest as aneurysmal enlargement, aortic regurgitation or angina pectoris, alone or in combination. Pathologic evidence suggest that the disease probably remains latent and harmless for many years after the primary syphilitic infection and that in many, even perhaps most cases, it is merely a pathologic landmark in the post mortem examination. Actual clinical manifestations of cardiovascular lues such as pressure symptoms, decompensation, severe angina, etc., usually cause death within two years of the first onset of actual symptoms. Congestive failure usually occurs within a few months after the onset of frank dyspnea.

Aortic regurgitation without stenosis, unaccompanied by mitral disease or rheumatic history and in the absence of bacterial endocarditis, in a man under forty-five is usually syphilitic. The disease attacks no valve but the aortic, where it produces a regurgitation in one-half the cases.

When syphilitic aortitis narrows the coronary orifices in its progress toward the heart, angina pectoris is a common feature of the disease. However, pathologic evidence of syphilitic cardiovascular changes are found in less than ten per cent. of all angina cases coming to autopsy. Angina pectoris before forty is somewhat suspicious of spyhilitic aortitis. As the Wassermann is positive in about eighty per cent. we must rely upon clinical diagnosis in the remaining twenty.

When the syphilitic process invades the aorta higher up aneurismal dilatation often results. Diffuse generalized dilatation of the aorta is usually produced by hypertensive disease and not by syphilis. The problem of prevention of the serious results of cardiovascular syphilis resolves itself into early diagnosis and adequate treatment of its early stages, before the heart and vessels have become seriously impaired.

Hypertensive Heart Disease: The most frequently encountered type of decompensated heart disease in adults is that associated with long standing hypertensive disease. Because it occurs so frequently and has such constant clin-

ical and pathological characteristics, we feel that it warrants a definite group in the classification of heart disease, even though arterio-sclerotic coronary involvement is so constantly associated.

Approximately 140,000 persons in the United States, on a conservative estimate, die each year from the consequence of high blood pressure. Over half of these deaths result from cardiac failure. Bell and Clawson[5] found myocardial insufficiency and coronary disease responsible for 60 per cent. of the deaths in 420 cases of primary vascular hypertension. In a series of 100 autopsied hypertensive cases at Cleveland City Hospital Scott[3] found myocardial failure to have been the cause of death in 68, cerebral accident in 22 and renal insufficiency in but 10.

Kieth, Wagner and Kernohan[6] stressed the characteristic histologic picture in so-called malignant hypertension as showing a diffuse generalized hypertrophy of the arterioles and described the picture as one of simultaneous rapid functional failure of the kidney, heart and brain, because of the widespread vascular changes occurring in these organs. This is the type of hypertensive disease represented in the small percentage terminated by uremia. It is apt to come on earlier in life than the more benign type and is characterized by rapidly developing renal, cardiac and cerebral manifestations, very frequent renal failure, marked neuroretinitis and usually a very high diastolic pressure. This disease like diabetes seems especially vicious in the earlier decades of life.

In the average benign hypertensive case, symptoms of cardiac embarrassment do not begin to develop for 12 to 15 years or more after the onset of definitely established hypertension, unless there is a marked degree of coronary arteriosclerosis present or other complications have developed in the meantime, such as severe infections, diabetes, cardiovascular syphilis, etc. The symptoms of the decompensated hypertensive do not differ essentially from those of heart failure due to other causes.

The prognosis of the average hypertensive case is influenced unfavorably by a cardiovascular family history with incidence of hypertension, apoplexy, or middle life cardiac or renal disorder. Other unfavorable prognostic signs include the presence of a relatively high diastolic pressure, very marked cardiac enlargement, or history of progressively increasing dyspnea or angina. Electrocardiographic evidence of severe or progressive myocardial conduction or coronary changes is often an important factor in formulating a thoughtful prognosis.

A good prognosis in hypertensive disease may reasonably be ventured in a case not too marked before fifty, coming of a fairly long lived family, without striking incidence of cardiovascular disease; showing slight or moderate cardiac enlargement with good response to effort. A fairly stable nervous and emotional balance is a good prognostic asset, as is freedom from obesity, diabetes, or renal impairment.

Surgical Prognosis in Hypertensive Disease: The operative risk in cases of hypertension free from complications, is very little greater than in normal cases. A systolic pressure may be high without materially increasing surgical risk, if the diastolic pressure and heart size are not too greatly increased and ordinary effort well tolerated, and renal function is adequate. High diastolic pressure is a warning signal, especially when associated with considerable cardiac enlargement and a history of dyspnea or substernal distress on slight effort.

McQuiston and Allen[7] report a series of 350 hypertensive cases undergoing major operations with a mortality almost paralleling that of a normal pressure group, except in the gastric and duodenal cases when the operative mortality in 50 hypertensive cases was 8 per cent. as compared to 3.1 per cent. in normal cases reported by Balfour at the same Clinic. The breast, gall bladder and pelvic mortality rates were almost identical in the normal and increased pressure groups.

The cardiac patient is a fair surgical risk as far as the danger of myocardial failure is concerned. We are convinced that the danger of actual heart failure during or immediately following well conducted surgery, with ideal anethesia is over-estimated. The carefully supervised, properly prepared cardiac subject is not under an alarming handicap, as far as danger of myocardial collapse or congestive failure is concerned. A good many post operative deaths attributed to cardiac failure are actually due to peripheral vascular collapse hemorrhage, peritonitis, etc.

In cardiac subjects past middle life the increased danger from coronary occlusion and

pulmonary embolism is a factor to be considered. Purks[8] in a study of post operative complications feels that the cardiac patient is more liable to fatal pulmonary infection than the non-cardiac by a ratio of 4 to 1. This study suggests the great importance of routine post operative carbon-dioxid-oxygen inhalations in this type of case.

The Prognosis of Coronary Disease: One of the most important causes of cardiac failure and death in the 5th and 6th decade particularly, is coronary disease and its sequalae. With advancing years the coronary arteries become thickened and hardened and the delicate intimal lining becomes roughened and scarred and the lumen narrowed. If the process goes no farther we may have chronic incomplete coronary occlusion with probable gradual development of compensatory collateral channels through arterial anastomoses and even the Thebesian vessels in older subjects. Such conditions may be entirely unproductive of symptoms or may give rise to vague, indefinite substernal distress, mild anginal symptoms, progressive effort dyspnea or paroxysmal nocturnal dyspnea. But if thrombosis occurs at the site of coronary construction or ulceration, complete occlusion with myocardial infarction ensues, the immediate mortality of which varies with the extent of the involvement. More than 90 per cent. of all individuals dying suddenly, death coming within 5 to 10 minutes from the time they seemed in customary health, will show at autopsy a cardiac lesion, usually coronary thrombosis or rupture of the heart at the site of former infractions, or more rarely rupture of the aorta. Seldom is cerebral hemorrhage fatal within a few minutes. In spite of these well established facts reports of sudden death due to "acute indigestion" are frequently encountered probably because of the vomiting and epigastric pain so frequently occurring in coronary thrombosis.

The cases that survive the initial attack of occlusion and thrombosis coming on with the severe anginal like pain, must be distinguished from angina pectoris, which is rather generally conceded to be caused by either a transient coronary angiospasm of inability of the coronary vessels to dilate with the increased demand of exertion but without the permanent occlusion that occurs in thrombosis. In contrast with the prolonged nature of thrombosis an attack of angina lasts but a few minutes. Angina actually *terminates* some stress or strain, whereas thrombosis occurs *sometime after* exceptional effort in an anginal patient, or even while at rest. Fitzhugh and Hamilton[9] in an analysis of significant events preceding 100 fatal occurrences of angina and coronary thrombosis, in anginal patients, found that 31 had indulged in unusual physical exertion and 44 had become unusually fatigued from either exertion or loss of sleep. A series such as this should make us realize that perhaps *some* of these fatal attacks might be preventable or at least deferable. A fatalistic attitude in this syndrome is held by many physicians, which is anything but justified in the present state of our knowledge. A carefully regulated regimen of living with appropriate treatment should be quite useful in avoiding or postponing coronary occlusion or fatal anginal attacks in the anginal subject. After all it is the mode of living rather than the use of drugs that influences mostly the prognosis of the anginal syndrome. The milder types of coronary occlusion or "occult coronary cases" are the ones that should be given more careful study, for judicious care and treatment of these cases will frequently prevent or defer the major episodes. The development of electrocardiographic investigation in this field has helped materially to crystallize our clinical concept of this syndrome, the symptomatology of which may vary from vague indefinite sensory phenomena to classical occlusive attack, with many typical intermediate expressions.

Early Subjective Expression of Coronary Disease: Apart from the well recognized, more typical coronary syndrome we have come to recognize the following symptoms as suggestive of coronary disease. Obscure epigastric pain with severe burning or pressure; vague substernal discomfort; a precordial ache that extends to the sternum; paroxysmal pains in the throat or even in the neck or occiput or even aching pains in the wrist. The purely subjective sensory phenomenon may or may not be associated with other episodes such as cardiac fluttering, paroxysmal nocturnal dyspnea or unaccustomed dyspnea upon mild exertion, developing insidiously without a previous cardiac history.

Objectively, disturbances of rhythm such as paroxysmal tachycardia, auricular fibrillation, runs of premature systoles coming up in an

adult heart, previously symptom free and not showing any of the anatomical landmarks of antecedent cardiac disease, is an extremely suspicious circumstance that should be considered coronary in origin until proven to the contrary. In the absence of hyperthyroidism fibrillation appearing in a previously regular hypertensive heart is more likely than not due to the effect of a sublethal coronary occlusion. That coronary disease should be more frequently present than we have hitherto suspected is not surprising when we consider the fact that arterial degeneration in general is the inexorable and universal result of the aging process through the later decades of life. That this deterioration should so frequently involve the coronary vessels is not inconsistent when we consider the fact that the coronary vessels are the first and most important branches of the aorta and share first hand all of the shocks and strains of that great primary vessel. Then again the cardiac muscle is never resting and being always active should be affected promptly by any impoverishment of its blood supply. Furthermore, Werley[10] found that the coronary arteries are sclerosed twice as often as the renal ones and three times more often than the cerebral vessels.

The prognosis of the coronary syndrome is always fraught with uncertainty, for it is the most treacherous form of heart disease.

Conner and Holt[11] report 62 per cent. of 287 cases of coronary thrombosis, occurring without antecedent cardiac symptoms, in persons who had no reason to doubt their cardiac integrity. The immediate mortality was 16.2 per cent. of 117 cases who recovered satisfactorily from the first attack; 75 per cent. were in good health at the end of one year; 53 per cent. at the end of two years; and 21 per cent at the end of five years. One of these patients remained in good health for 17 years and died in a second attack during the 18th year. The initial attack of one-third of these cases occurred before the 51st year and three-fourths before the 61st year, indicating that coronary thrombosis must be considered a disease of early middle life, rather than of elderly life. Thirty-four per cent. were known to have had antecedent hypertension, 14 per cent. syphilis and 10 per cent. diabetes.

An indication of the frequent occurrence of various degrees of coronary occlusion is furnished by the study of Barnes and Ball[12] who found post mortem evidence of a recent or remote occlusion in 5 per cent of 1000 unselected consecutive cases dying of all causes at the Mayo Clinic. Six hundred and eighty-five of the cases were over 40 years of age and in these the incidence was 7 per cent. or one in 13. A majority of these latter subjects had had hypertension during life.

SUMMARY

In general the ultimate prognosis of heart disease is influenced principally by the morbid tendencies inherent to each etiological type. Thus patients with rheumatic heart disease often go for many years with non-progressive dyspnea on exertion and no other symptoms whereas patients with syphilitic heart disease usually have congestive failure within a few months after they first begin to be short of breath. When patients with emphysema begin to show signs of cardiac failure, life is not usually prolonged for more than one or two years.

Specific variations in the prognosis of any particular type may be determined by such factors as heredity and family history. There are some families whose members seem especially prone to develop myocardial and coronary degeneration soon after middle age, without any definite antecedent disease. Age, temperament and the presence of obesity or diabetes should all be taken into account in forming a prognosis. Much will depend upon how early in the disease adequate treatment can be carried out and upon the cooperation of the patient in changing his mode and habits of living, particularly in the way of moderating effort and enhancing rest.

The ultimate prognosis is greatly influenced by the degree of myocardial reserve and coronary integrity. Though frequently difficult to evaluate with constant accuracy these factors are often indicated to the thoughtful clinician by such observations as:

1. The degree of effort or stress required to produce dyspnea or anginal symptoms. Dyspnea at rest is a much more dangerous sign than is dyspnea on exertion.

2. The appearance of clinical signs known to be of ominous significance, such as gallop

rhythm, pulsus alterans, coronary occlusive episodes, paroxysmal nocturnal dyspnea and severe congestive states not responding well to digitalis, diuresis and rest.

3. The presence of marked cardiac enlargement with a history of gradually lessening myocardial reserve.

4. Evidence of progressively abnormal changes in serial electrocardiograms. Except for evidence of aborization or bundle branch block, the appearance of such abnormalities as T wave or S-T interval changes on any one tracing has no reliable prognostic significance.

Certain constitutional diseases seriously affect cardiac integrity. They are chronic glomerular nephritis, arteriosclerotic diabetic states, malignant hypertension and cardiovascular syphilis.

Final prognosis in heart disease, especially with decompensation, must always be deferred until sufficient time has elapsed to observe the degree of recovery and restored reserve which the heart may develop, under adequate treatment.

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SYMPTOMS AND TREATMENT OF THE RHEUMATIC CHILD

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CHICAGO

The symptom complex of acute rheumatism as seen in the adult, with high fever and sudden onset, severe inflammation of joints with swelling, redness and tenderness, the nervous manifestations and drenching sour acid sweats, are not commonly seen in the child. Instead we more often find a slow onset and the group of symptoms are more insidious and cover a longer period of time. The history reveals frequent recurrences of upper respiratory infections followed by malaise and growing pains. There is a decrease of normal turgor and a slight and intermittent fever soon appears. The pulse rate is increased out of proportion to the temperature, profuse sweating occurs at night; this is associated with increasing pallor, with anemia and a slight elevation of the white blood count. Recurrent nose bleeds are common and also choreic manifestations with the occasional development of rheumatic nodes and frequent appearance of slight cardiac murmurs.

The malaise and fatigue are not complained of by the child and are observed by the mother or nurse or school teacher, and are different from the growing pains which cause the child to complain. These rheumatic pains occur mostly at night, usually in the early night hours and are located commonly in the lower extremities although the upper extremities may be involved. Their most common site is back of the knee, next in the calf of the legs and less frequently in the hip and ankle.

The temperature is usually not high. The elevation occurs in the afternoon and evening, 99.5 to 101 being about the average range. In cases of rheumatism of long standing the temperature may even be less elevated during a severe relapse.

The pulse rate is increased to 110 to 140 and the ratio of the pulse and temperature is out of balance as to rapidity if you accept 10 beats to 1 degree of temperature. It is frequently intermittent and often of fair quality but still persistently faster than normal. While the temperature in relapses may not go higher yet the

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pulse rate tends to deviate more from the normal ratio with each relapse.

In the majority of cases the sweating is profuse, occurs mostly when asleep, especially about the head, neck and shoulders, and has a very distinctive odor. During waking hours the skin is usually a little clammy and the hands moist.

Skin rashes would appear to be common, various, in fact almost all types and forms of erythema, the type which appears as a fine blush over the pectoral and deltoid muscles, being rather distinctive for rheumatism; sudamina and intertrigo frequently occurring as the result of the fever and sweating. The pallor is rather marked and more noticeable by observation than by the blood count which is probably due to the contraction of the small peripheral vessels, the hemoglobin lessening and the red count not being as much diminished as you would be led to expect by the pale appearance of the child.

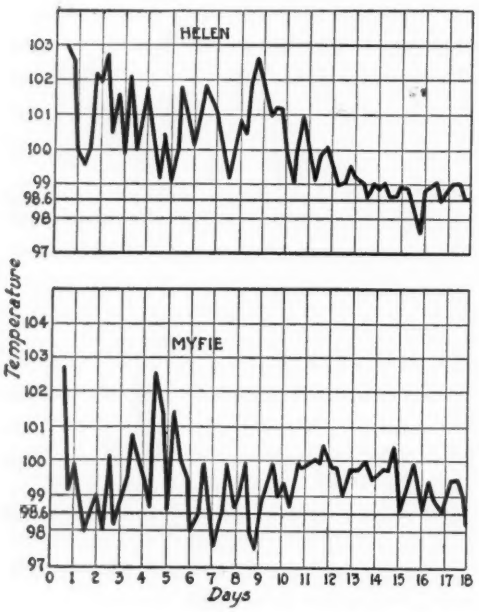

Fig. 1

Nose bleed, while common in childhood, would appear to be so much more frequent in the rheumatic child as to justify including it as one of the common symptoms of the rheumatic child, fully fifteen per cent. giving history of frequent recurring nose bleeds. The hemorrhages are usually unilateral, often quite profuse during the declining or the freedom period of the upper respiratory infection; but not as a usual rule when the respiratory infection is at its height.

The rheumatic nodes are not noted as frequently as described by English clinicians but can be found very frequently if sought. I would rather say that the nodes are much larger in England and easier found, for our experience would show that 15 to 20 per cent. have rheumatic nodes. These nodes are most common on the knuckles.

I have used the term "chorea state" rather than chorea, and by that is meant emotional instability, a tendency to cry easily, a tendency to laugh easily, some mental impairment shown by poor work in school and failure to adjust to the social environment of his daily life, talking in his sleep, disturbed restless sleep, sleep walking, night terror, headaches, epigastric pain and lack of appetite with disturbed digestion, and mild slight twitchings and incoordinated movements.

This talk on symptoms could go on indefinitely but I think more can be accomplished by speaking on one particular pathological, clinical and therapeutic aspect of childhood rheumatism.

I am not saying anything new when I speak of the close resemblance of rheumatism and tuberculosis. Both may be latent and make a sudden dramatic appearance, both may require months to make a definite diagnosis. In the young, tuberculosis and rheumatism both assume a generalized form. Later, with age, they both tend to become localized; in tuberculosis as a chronic fibrous lung condition, in rheumatism as a mitral stenosis of a fibrous nature; the endo

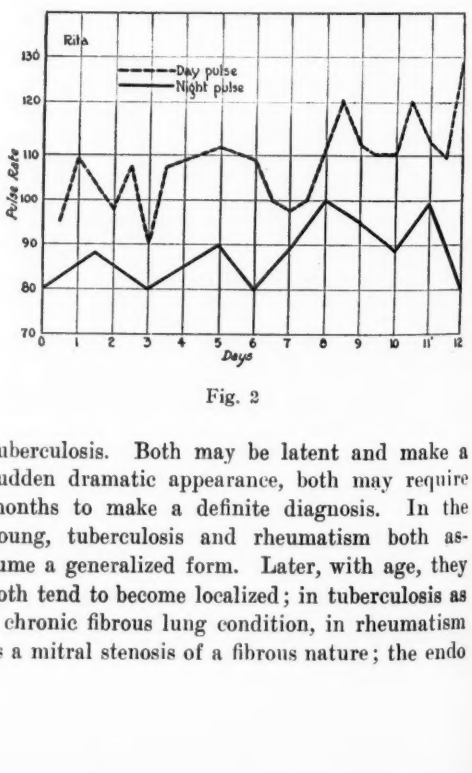

Fig. 2

and the pericardium in rheumatism, the pleura and the peritoneum in tuberculosis; the meningitis in tuberculosis and the chorea in rheumatism; the rashes on the skin in both. Tuberculosis and rheumatism claim the symptom complex erythema nodosum; the ability to get a skin reaction with the streptococci culture derivatives such as we get with our Von Pirquet reaction with a tubercular culture derivative. In neither reaction has it been possible, by treatment, to get an immune reaction after vaccine treatment such as we get after a positive Dick scarlet streptococci test followed by five injections of the Dick streptococci toxine. In a pathological sense we might even stretch our imagination and say that in a way the Aschoff nodule is akin to the tuberculosis nodule.

The French have even evolved certain sets of symptoms which they speak of as "le rheumatisme tuberculeux." That the two diseases are frequently associated no one doubts; there is the chronicity of both diseases, the tendency to relapse, the small intermittent temperature; the same progress to a worse condition unless properly handled. The physicians specializing in tuberculosis speaks of an arrested case, rarely of a cure. So should we speak only of an arrested case of rheumatism. Unless the usual care is taken, thirty per cent. of your rheumatic children will relapse with a very definite attack in eighteen months, very few without a relapse of more or less severity.

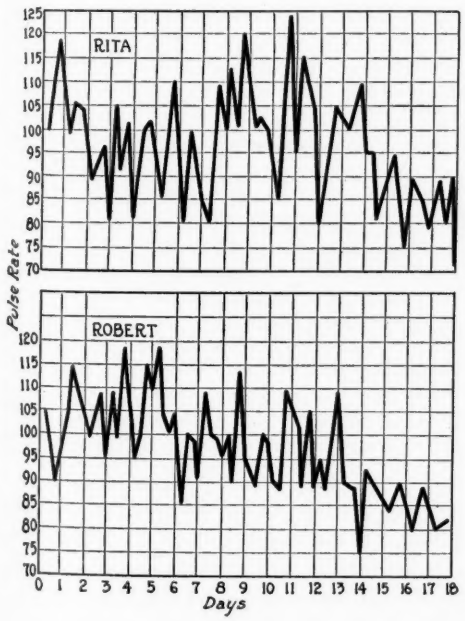

Fig. 3

Even in books we find the descriptions of subjective and objective symptoms, noted by the mother in regard to her child, a marked similarity in the two diseases. I quote from two authors and ask if there is much difference in these quoted observed symptoms:

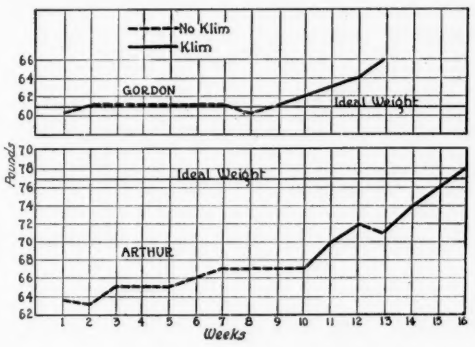

Fig. 4

Abt—Pediatrics, pg. 192—"The manifestations in such children are characterized by insidious onsets. Such children are pale, easily fatigued, poor appetite and no gain in weight. Many complain of slight pain in the legs. Digestive disturbances with paroxysmal abdominal pains are common. There is a change in disposition. Children become irritable, peevish and are easily frightened."

Holt—Pg. 1036—"They are persistently anemic without known cause. In spite of careful feeding they do not gain or lose weight. They are irritable and easily frightened. After these undefined symptoms have lasted a few weeks a slight fever is added."

In our physical examination of these two chronic infections we frequently have to resort to our laboratories to help us make our diagnosis with our blood counts, our skin reactions and our x-ray pictures. It would seem to me that with all the similarity of the two diseases in so many of their pathological and early clinical symptoms it would be wise if we would somewhat follow out the method of treatment of the tubercular patient.

It would seem that, like the physicians specializing in tuberculosis, while not spurning the value of various drugs, yet realize that fresh air, rest and abundant food, careful hygiene and education of the parent, have done more than any

other method of treatment, and have added more years of happiness, usefulness of life than any other one form of medication. It is with this example daily demonstrated to us that makes me ask that we look at the *rheumatic child* through the same glasses. First in the treatment,

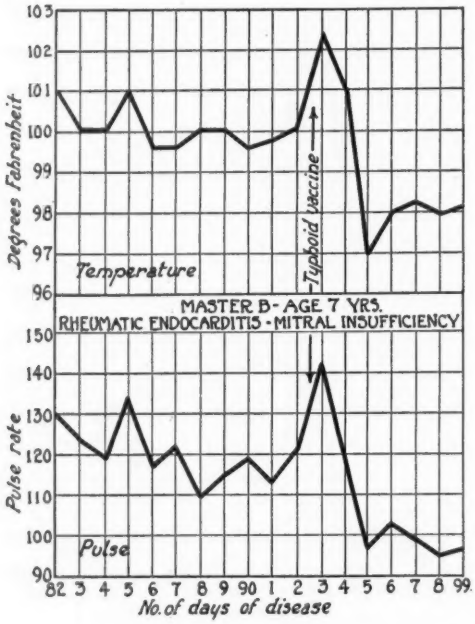

Fig. 5

we should exert eternal vigilance for the onset and for the relapses. Then educate the parent to realize that every little infection may upset the narrow allergic balance of the child and to protect by rest and such medical and nursing care, these little patients through their simple infections; that the symptom "tire" in childhood is of grave importance, much more so than in adults; that slight temperatures are a warning of an infection, that flabby flesh instead of turgor is a symptom, that a failure to gain is a sign of importance. That the *rheumatic child* becoming emotionally unstable and a little more *incoordinate* in his movements is in need of rest just the same as the adult tubercular patient who becomes nervous, loses a little weight and begins to have a few vague pains in his chest. The parent should be trained that just because the child is nervous and has a heart murmur is no reason to relax all discipline. I know no quicker way to send the rheumatic cardiac to the grave than to spoil the child. Equally important is the education of the child without making him conscious that he is an invalid or a cripple.

Rest and housing are of first importance. Keeping the child in bed is of prime importance and these patients will soon learn to be happy and enjoy working with their heads and hands and not their entire body. The furnishing of play without physical work soon makes play with physical work less desirable and it is frequently valuable in the child's future life that he finds out early that it is more fun to ride than to walk. The difficulty is to know when to let this child out of bed and as yet no method has been evolved except experience. The old rules of a steady consistent gain in weight, somewhere near the normal gain for his age, the temperature below 99 and the pulse below 100 have been added to and lately we have tried to convince ourselves he must have a sedimentation rate below 100. A child who will frequently lie back with the side of his face on the pillow or will lean his head on his play table is a tired child and should not be permitted up. The process of getting up should be a gradual one and carefully supervised. An increase in pulse rate should not be alarming unless it persists, as often this unstable organ responds to the nervous excitement and after a few days, if the pulse recedes, more play time may be allowed. Our method is

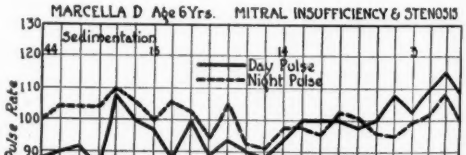

Fig. 6

first bath room privileges then up one hour, then 2, 3, 4, etc. As a rule, before the child is given bath room privileges he has already had considerable exercise in his bed.

The Housing: In our experience warmth has much to do with the condition of the child. For a while we open all windows and allow the child to sleep in a cold room during his afternoon nap and at night. The result of this was many more relapses or recurdescences, so while we try very hard to keep the air fresh, cold air is avoided.

There are two rooms over our boiler room which even with the windows wide open keep around 75 to 80 and I think all our bad relapses do much better in these rooms.

The nutrition of the rheumatic child furnishes a problem. We feel it is essential, in combating a chronic infection, to improve the physical condition of the patient. Most all these children are suffering from that anoxemia that occurs with the absorption of toxins plus an aversion to food caused by the constant urging, throughout many weeks, that he eat. All the various plans of dietitians, psychologists and pediatricians have been tried. Our most successful plan has been to start with small quantities on the trays and to demand that the tray be cleared before bed play or amusement can take place. This rule is enforced until it becomes a habit. Then gradually the amount of food on the tray is increased. We have tried all methods of fortifying the milk in order to increase the calories taken, such as cream, various malts, cocoa, etc., but we have found fault with all of them. Sugar is frequently poorly tolerated, heavy cream mixture produces nausea, etc. We have finally found that dry milk is our best method. We use from 4 to 12 tablespoons to a quart of milk. It is well tolerated and the child acquires a liking for it instead of growing tired of it.

In the way of medicine, I have nothing to say except what is already known, that all drugs fail at times. I have long had a preference for sodium salicylate in large doses given by rectum for 3 to 5 days then a much smaller dosage by mouth for several weeks. The use of various vaccines or foreign proteins often help and probably should be tried more often, but the effect of an increased temperature and pulse sometimes gives the doctor more of a shock than he wants.

Fig. 1. This is a temperature chart of two patients who came in on the same day. Helen had an acute pericarditis, rheumatic; Myfie had a pulmonary tuberculosis. You can see the similarity of the temperature curve.

Fig. 2. This child had a chorea. We take all our pulses at midnight and compare them with the day pulse. The chorea child will run a great variation in rate between the night and the day pulse. This child's pulse rate has a variation from twenty to 30 beats between the sleeping period and the waking period.

Fig. 3. This chart was taken just to show the effect of rest on the rheumatic child—no medication was given. This chart covers a two weeks' period. You can see the onset, the pulse when the children arrived, and you can also see the day and night pulse. This chart is made to show the pulse rate taken at midnight and noon. The rate drops from 120 to 85, simply by rest in bed with no medication whatsoever. This makes you doubt how much benefit you derive from medication. Rest apparently being the best medicine.

Fig. 4. This chart was made simply to show what can be done to increase your feeding value by adding dry milk to your whole milk. The figures on the lower line show the weeks. Gordon came in and for nine weeks made no gain whatsoever. He was then put on Klim, a dry milk, and he gained satisfactorily from then on. The other child gained very poorly without fortified milk. Then he was placed on the dry milk and at once gained very rapidly, gaining four pounds and one-half in six weeks. Then he was taken off the dry milk and promptly slipped back in weight although he had no recurrence of his rheumatism. Again given milk fortified with the dry milk he again proceeded to gain.

Fig. 5. I spoke very slightly of foreign proteins as to the results you might have sometimes. My own experience has been that the results obtained from foreign proteins as a usual rule are not very satisfactory, but when you do secure them they are startling and encourage you to try again. This child has been under observation for some two months, running a daily intermittent temperature most of the time around 100 and 101. He is seven years old. He was given ordinary typhoid-paratyphoid vaccine under the skin, and that evening developed a temperature up to 102 and a half which the following day came down to subnormal and stayed that way afterwards.

Fig. 6. It was Schlesinger who first called attention to the fact that there was a difference between the night and day pulse. This child had bad tonsils. She had been in the hospital some 139 days, during which time we had been trying very hard to get her into condition where we thought her tonsils could be safely removed. She was then sent to Michael Reese, with a sedimentation test of twenty-five and the tonsils were removed. She came back after the third

day and the following picture was present: The sedimentation had gone up to 44. The night pulse, in contradiction to what I showed you on the chorea pulse rate slide was running higher than the day pulse, the day pulse being in the heavy black line (indicating) persistently below the night pulse until the 14th day when it passed over and from that day on resumed the normal characteristic, which is from six to ten beats slower at night than it is by day.

It also gives you some idea as to how profound a shock you sometimes get on removal of tonsils. When the child went in to the hospital the day pulse was higher than the night pulse. The sedimentation was twenty-five—it jumps to forty-four, and the rate of your night pulse and day pulse reverse.

While Schlesinger's observation has not been extremely common in our experience, it is very valuable when you do find it and it certainly makes you very careful in permitting this child up to take any exercise.

Resume: We all should look on rheumatism in childhood as a serious affair and keep these children under much closer observation than is usually practiced. Rest is the most essential during any active period of the rheumatic virus, and moderate exercise can be resumed as soon as you are sure that the rheumatic virus is not active. We still lack a definite method of telling when activity is over and experience and experiment must be our guide. Increased caloric intake is most valuable and can be obtained if proper methods are used. In most instances it is the effect of the active rheumatic virus on the heart and circulation that does the damage, not the failure of the mechanical function.

Hotel Del Prado.

DISCUSSION

Dr. H. Wm. Elghammer (Chicago): Dr. Black has covered his subject of rheumatic infections very thoroughly and there is very little I can say to add to it, but I think there are a few points that if not entirely new were brought out in a new light and well worth to be emphasized.

It has been customary to look on rheumatic infection as being separated in rather distinct entities—arthritis, chorea, endocarditis, etc. We also have had the idea handed down to us that it is a progressive condition with repeated infections passing through various stages of growing pains, articular infection, chorea, etc., eventually resulting in a heart condition.

I think the fact that Dr. Black brought out is an important one—that is the large scope of this infection, its insidious character and distinct tendency to generalization. Although he did not stress the point—the heart condition is not a complication of rheumatic infection, but the heart is actually the first or one of the first organs to become affected. With this point in view we feel we are able to diagnose endocarditis much earlier than in years past, and we do not hold ourselves to the classical findings of murmurs, enlargements, etc., in the diagnosis of acute endocarditis.

Dr. Black mentioned the sweating and I do think this is a rather typical symptom. The sweating comes on after the child relaxes and goes to sleep and usually occurs in the first hour or two. If the child is taken care of—his bed clothing changed, he is not apt to sweat any more through the night. It seems to be a vasomotor phenomena. The pallor is rather typical of the rheumatic child—the pallor of the face, the clammy hands and the cold feet, without a decrease of hemoglobin.

In bringing out the large scope (as I said) of this infection, Dr. Black paralleled the rheumatic infection with tuberculosis and I am sure we all can see the great resemblance in the two infections.

Regarding the rheumatic infection from a pathological standpoint we may recognize the toxic state and possibly the allergic state, then the productive state, that is the formation of Aschoff's nodules and valvular changes, etc. Furthermore, the degenerative and ulcerative changes seen in the so-called bacterial endocarditis may be another expression of rheumatic infection due to a different tissue reaction.

The very last word of Dr. Black's paper perhaps escaped you. It has been a revelation to me. We used to think when considering a cardiac condition, that the compensation of the heart was mainly depending upon mechanical factors. In fact, some three or four years ago we spent quite a little time on devising various tests and exercises to determine the cardiac capacity.

It seems that with the experience we have had and from some tests we have been able to apply to these children that decompensation of the heart rarely occurs from mechanical strain. On the other hand, decompensation is brought on by minute and slight additional infections. Possibly then, mechanical factor is not to be feared in the decompensation of the heart in children, much more so repeated infections.

Dr. Black mentioned the sedimentation test. This test is being used extensively in Europe. During the last two years we have applied it to our rheumatic patients. As you know, the sedimentation test indicates the presence of toxic substances in the blood stream, of some kind or other. We find that if our children can be brought down to a normal sedimentation rate and held there for several weeks they usually make a nice recovery.

The decrease in the sedimentation rate parallels very closely the increase in weight and general improvement of the child. On the other hand a persistently high sedimentation rate over a period of four, five and

six weeks has usually spelled a very gloomy prognosis. (Applause)

Dr. Isaac A. Abt (Chicago): Mr. Chairman, I think I express the opinion of this Section when I say that Dr. Black has presented a very able and instructive paper. Since Dr. Black has seen a great many cases of rheumatic carditis, I should like to ask him what his opinion is concerning rheumatic pneumonia.

Dr. Robert A. Black: I am firmly convinced that there is such a clinical entity as rheumatic pneumonia.

NEW ASPECTS OF THE PUBLIC HEALTH SITUATION

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The three major communicable diseases which have responded most satisfactorily to preventive and control measures during the last quarter century are diphtheria, tuberculosis and typhoid fever. All three have been plagues of the first magnitude in Illinois. The improvement against each has been tremendous. In 1900, for example, when mortality reports were seriously incomplete, no less than 11,750 deaths were attributed to these three diseases in Illinois, whereas in 1933 they accounted for only 4,387 deaths. Estimated on the basis of ten cases per death there was an aggregate of 117,500 cases of diphtheria, tuberculosis and typhoid fever in Illinois in 1900 when the population was 2,800,000 less than it is today. In 1933 only 11,685 cases were reported and if estimated on the basis of ten cases per death there were only 43,870, considerably less than one-half the 1900 prevalence estimate in a present population nearly double that at the turn of the century.

The improvement, however, has not been geographically uniform. In some areas of the State the decline of all three diseases has been rapid and persistent. In others the improvement has been very gradual indeed, with losses in some counties from one or another of the three diseases reaching heights equal to those that prevailed thirty-five years ago.

This situation indicates that there are important pools of infection which have not been dried up and that there are relatively large blocks of the population which have little or no protection against these preventable infections. The purpose of this paper is, therefore, to analyze the available statistical data in a way that will establish where control measures with reference to these three diseases are most needed.

This information will make possible a selective program that should produce a maximum of results. Each of the three diseases will be discussed separately.

DIPHTHERIA

Rarely has a disease responded more dramatically to control measures than has diphtheria during the last decade. Both prevalence and mortality in Illinois have declined 88 per cent since 1922. Up to that year as far back as reliable records extend there had never been

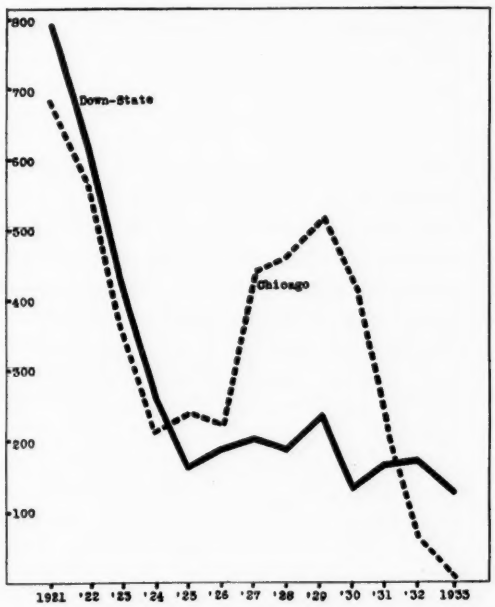


Fig. 1. Deaths from diphtheria in Illinois.

fewer than 1,000 deaths attributed to diphtheria in any year, and case reports ranged from 10,000 to 20,000 annually. In 1933 there were only 134 deaths and 1,695 cases of illness attributed to diphtheria in Illinois. Of the deaths only 9 were reported from Chicago, leaving 125 for the remainder of the State.

In 1922 the mortality from diphtheria was fairly evenly divided between Chicago and down-State, 569 deaths being reported in the city and 612 outside. Vigorous immunization campaigns in Chicago and at strategic points throughout the State were inaugurated about that time and

TABLE 1., DEATHS FROM DIPHTHERIA IN ILLINOIS

	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Chicago	569	366	216	241	224	442	456	515	411	216	66	9
Down-State	612	435	256	167	189	207	193	241	132	167	174	125
State	1,181	801	472	408	413	649	649	756	543	383	240	134

there followed a rapid decline in mortality in both areas. This downward trend reached its lowest point in 1925 when only 408 deaths were recorded in the State, an exceedingly favorable record up to that time.

From then until 1929 the trend, as may be observed from Figure 1, was again upward, due chiefly to a sharp upward swing in Chicago where the number of deaths reached 515. Since 1929 the downward trend has been precipitous in Chicago and sharp down-State.

The remarkably favorable experience for the State in 1933, a rate of 1.7 per 100,000 population, shows up in bold relief those areas which experienced heavy losses in that year. These are presented graphically in Fig. 2. There were fifteen counties that had death losses of 10 or more per 100,000 people. These are shown in black on the chart. It is interesting to observe that nine of these fifteen counties are located in the lower southern third of the State. In the same area are found six of the eleven counties which had death rates of from 5 to 10 per 100,000 people.

TABLE 2., FIFTEEN COUNTIES WITH HIGHEST 1933 MORTALITY FROM DIPHTHERIA

County	Cases	Deaths	Death Rate*
Hardin	6	3	43.0
Richland	18	4	28.2
White	12	4	22.1
Massac	10	3	21.1
Woodford	21	3	16.0
Hamilton	11	2	15.8
Hancock	13	4	15.1
Moultrie	9	2	15.1
Alexander	25	3	13.5
Pope	2	1	12.5
Shelby	16	3	12.0
Jackson	47	4	11.2
Stark	16	1	10.9
Wayne	12	2	10.4
Kankakee	26	5	10.0
Total	244	44	14.9

In contrast to these fifteen there were fifty-one counties that experienced no fatal losses from diphtheria during 1933. During 1922, on the other hand, only eight counties escaped without fatal losses attributed to diphtheria.

If the State is divided into three approximately equal geographical units, the northern, central and southern, with 33, 35 and 34 counties respectively, it is found that since 1929 the fatal losses from diphtheria have been persistently higher in the southern third than in the central. Since 1930 the losses in the southern third have been higher than in either the central or northern. In 1933 the excessive losses in the southern third were especially marked, not so much because they were higher than usual as because of the low points to which the rates had fallen in the other two areas. The trend in the three sections may be observed by reference to Table 3 and Fig. 3.

Fig. 3. Diphtheria mortality in Illinois 1923-1933.

TABLE 3., MORTALITY FROM DIPHTHERIA BY SECTIONS IN ILLINOIS

	33 Northern Counties		35 Central Counties		34 Southern Counties		State	
Year	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1923	543	11.5	118	10.3	140	14.5	801	11.7
1924	333	6.9	59	5.0	77	8.0	468	6.7
1925	324	6.9	40	3.5	43	4.4	407	5.7
1926	306	6.0	40	3.5	65	6.7	411	5.7
1927	543	10.5	53	4.6	51	5.2	647	8.9
1928	585	11.0	49	4.3	39	4.0	673	9.1
1929	658	12.0	45	3.9	52	5.3	755	10.0
1930	493	8.9	24	2.1	25	2.5	542	7.1
1931	269	4.8	50	4.4	59	6.0	378	4.9
1932	117	2.0	60	5.2	57	5.8	234	3.0
1933	46	0.8	31	2.8	59	6.0	136	1.7

Up to about 1929 diphtheria immunization campaigns were so planned as to reach chiefly school children. Experience was insufficient to make generally known the fact that diphtheria prevalence can assume serious magnitude in communities where most of the school population has been immunized. Since 1920, however, greater and greater stress has been laid upon the importance of protecting children under school age. Observation has shown that the immunization of one-third of the pre-school population, plus one-half of the school children, gives to a community a sufficient degree of general immunity to make highly improbable an epidemic of diphtheria.

Since efforts at promoting the immunization of pre-school age children began to be emphasized in Illinois the decline in the prevalence of diphtheria and mortality therefrom has been

especially rapid. In 1929 there were 755 deaths, giving a rate of 10 per 100,000 population. Each year thereafter the number of deaths dropped by a wide margin, the decline ranging from 212 in 1930 to 98 in 1933. The rate fell from 10 to 1.7, during those four years, a decrease of 83 per cent.

For the four year period ending with 1929 thhe State Department of Public Health distributed to physicians of Illinois toxin-antitoxin sufficient to immunize 305,077 individuals. During the four years ended with 1933 the volume of toxin-antitoxin and toxoid distributed was more than double that amount, sufficient to immunize 694,041. The average annual death rate

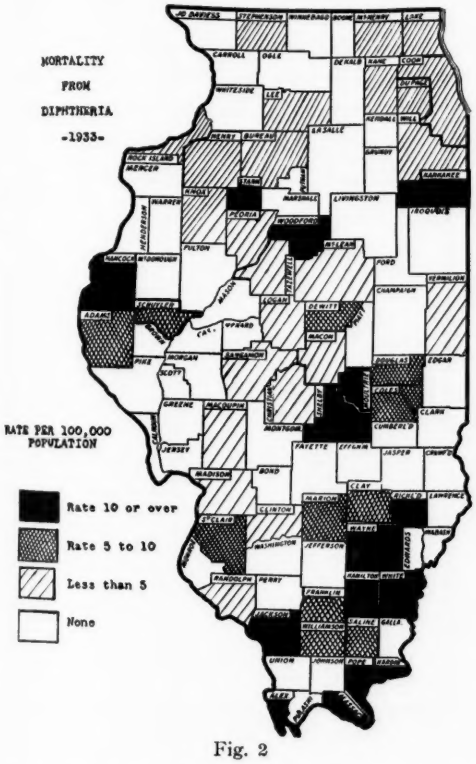


Fig. 2

from diphtheria during the four years ended with 1929 was 8.4 per 100,000 population and for the next four years it was 4.2. The lowest rate in any year of the first quadrennial was 5.7 and in the second 1.7.

TUBERCULOSIS

For the State as a whole the death rate from tuberculosis has declined from 83.9 per 100,000 population in 1922 to 53.6 in 1933, a reduction of 36 per cent. In the face of a growing population the actual number of deaths attributed to this disease went down from 5,620 in 1922 to 4,141 in 1933, an improvement of 26 per cent.

An analysis of the mortality data by counties

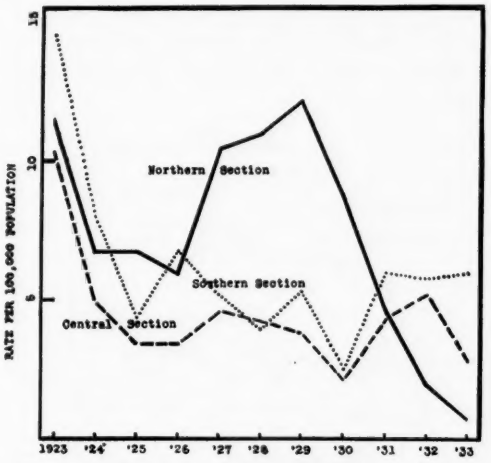


Fig. 3. Diphtheria mortality in Illinois, 1923-1933.

shows a wide discrepancy, however, not only in the degree of improvement but in the prevailing mortality rates. There was one county, Schuyler, that reported no deaths at all from tuberculosis during 1933 and eight other counties each of which had rates of less than 14 per 100,000 people. These nine counties, with the number of deaths attributed to tuberculosis and the rates for 1922 and for 1933 are listed in Table 4. The favorable difference between the 1933 and the 1922 rates is shown in the same table, expressed in percentage. These nine counties, which changed very little in population during the period, had 91 deaths from tuberculosis in 1922 and only 16 in 1933.

TABLE 4., NINE COUNTIES WITH LOWEST 1933 DEATH RATES FROM TUBERCULOSIS

	1922		1933		Pct. of
County	Deaths	Rate	Deaths	Rate	Decline
Schulyer	5	37.0	..	...	100
Jo Daviess	8	36.4	1	4.9	86
Ogle	14	52.2	2	7.0	86
Marshall	6	40.6	1	7.7	80
Kendall	3	29.7	1	9.3	68
Woodford	7	36.2	2	10.6	70
Mercer	9	47.8	2	12.0	75
Bureau	30	69.7	5	13.0	81
Mason	9	54.2	2	13.2	75
Total	91	38.3	16	8.7	80

It is interesting to observe that all of the nine counties which had the most favorable tuber-

culosis records in 1933 are sparsely settled, rural counties located north of Springfield. All but two are in the northern third of the State and those two, Mason and Schuyler, border upon the northern third. The death rates from tuberculosis in these nine counties in 1933 averaged 80 per cent. lower than did the rates for the same counties in 1922. The average rate for these counties in 1922 was 48.4 and in 1933 it was only 8.7.

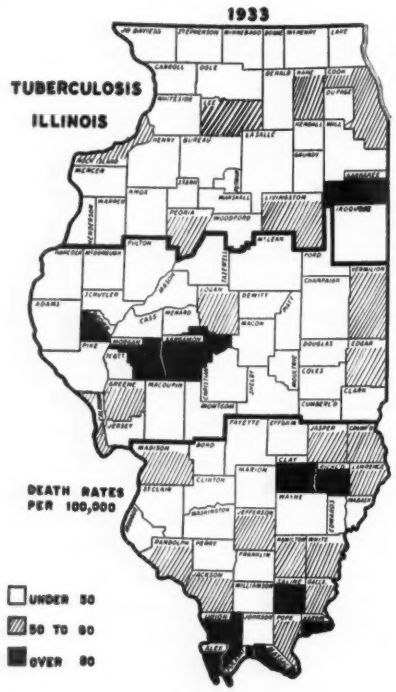


Fig. 4

Another group of nine counties which had the highest rates in 1933 are likewise nearly all sparsely settled rural counties. All but four of these nine, however, are located in the lower southern third of the State, a fact brought out strikingly in the accompanying illustration, Fig. 4. Only one of the four, Kankakee, is located in the northern third of the State. The other three, Brown, Morgan and Sangamon, are in the central section. In Kankakee, Morgan and Union counties there are large State hospitals which are important factors in the unfavorable rates from tuberculosis, the general populations in the counties being too small to absorb the influence of the institutional populations without manifesting noticeably higher rates than otherwise would prevail. Sangamon County has two large privately operated tuberculosis sanitariums that accept patients from other counties.

TABLE 5., NINE COUNTIES WITH HIGHEST DEATH RATES FROM TUBERCULOSIS IN 1933

	1922		1933		Pct. of
County	Deaths	Rate	Deaths	Rate	Decline
Union	46	226.6	29	146.0	36
Pulaski	25	171.2	19	127.0	25
Kankakee	68	148.0	63	123.0	17
Clay	16	90.4	18	112.0	24
Alexander	40	164.6	25	111.0	32
Morgan	57	170.1	34	99.0	42
Massac	22	161.7	14	98.6	39
Brown	9	96.4	7	89.0	8
Sangamon	78	75.7	102	89.0	(—17)
Total.....	361	128.0	311	105.4	28

As may be observed from Table 5, each of the nine counties having the most unfavorable 1933 records experienced rates in excess of 89 per 100,000 population. The average improvement in this group over the 1922 records was 24 per cent., compared with an average improvement

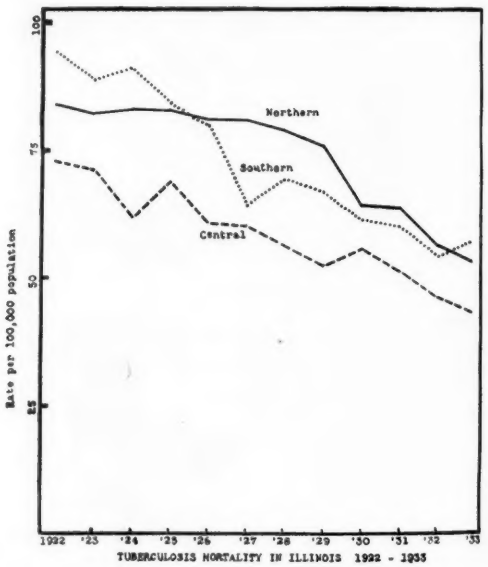


Fig. 5

of 80 per cent. in the nine counties with the best 1933 records. One of the counties with the worst records, Sangamon, had a 17 per cent. higher rate in 1933 than in 1922. In these nine counties, which had some increase in population, the total number of deaths from tuberculosis in 1922 was 361 and 311 in 1933.

Only 15 out of the 68 counties which make up

TABLE 6., DEATH RATES FROM TUBERCULOSIS IN ILLINOIS BY SECTIONS*

Section	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
33 Northern Counties	84.0	82.5	82.7	83.1	80.7	81.1	78.9	76.2	64.0	63.7	56.4	52.9
35 Central Counties	72.6	71.3	62.1	68.1	60.4	60.1	55.1	52.5	55.7	51.1	46.6	43.0
34 Southern Counties	94.0	89.4	90.1	83.9	80.0	63.3	68.1	66.6	61.6	62.4	53.9	57.3
State	83.8	81.5	80.5	79.3	76.3	75.0	73.6	70.2	62.5	62.2	54.0	53.6

*Rates per 100,000 population.

the central and northern parts of the State had mortality rates from tuberculosis in excess of 50 per 100,000 people in 1933. In other words, more than three-fourths of the central and northern counties had rates of less than 50 per 100,000.

Among the 34 counties that make up the southern third, however, more than one-half, 19, had rates in excess of 50 per 100,000. No

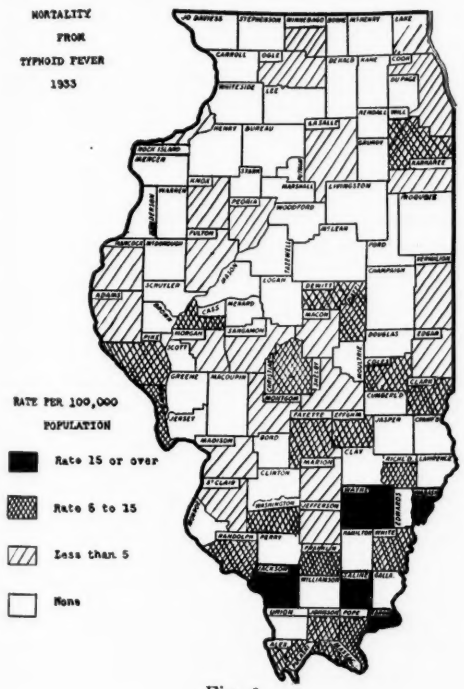


Fig. 6

less than 8 in this group had rates in excess of 80. In short, the biggest tuberculosis problem in Illinois is now in the extreme southern portion of the State.

There are fourteen counties in the State, each of which has more than 100,000 people. In all but Sangamon, the 1933 death rate from tuberculosis was substantially below the 1922 rate. The decline in rates varied from 61 per cent. in DuPage to 30 per cent. in Lake. The average improvement for the group was 40 per cent. In Table 7 are listed the counties of over 100,000 with the deaths and rates for 1922 and 1933, and the percentage of favorable difference. Sangamon alone in this group had a higher rate in 1933 than in 1922. For the fourteen counties which had a substantial aggregate increase in population the total number of deaths from tuberculosis declined from 3903 in 1922 to 3231 in 1933.

TABLE 7., MORTALITY FROM TUBERCULOSIS IN COUNTIES OF MORE THAN 100,000 POPULATION

County	1922 Deaths	1922 Rate	1933 Deaths	1933 Rate	Per Cent Decline
Winnebago	64	65.2	38	30.9	52
Lake	36	45.4	35	31.5	30
DuPage	38	85.6	34	33.0	61
Macon	47	69.1	29	34.0	51
LaSalle	72	77.9	38	38.6	50
Will	91	95.6	47	41.0	51
St. Clair	99	70.2	68	42.0	40
Rock Island	93	94.9	50	50.2	47
Peoria	116	101.1	75	50.7	50
Madison	89	79.4	82	54.0	32
Vermilion	88	99.7	52	57.8	42
Cook	2,883	89.5	2,490	59.5	33
Kane	109	106.8	81	61.9	42
Sangamon	78	75.7	102	89.2	17*
Total	3,903	87.5	3,221	57.2	43

*Increase.

An inquiry into possible factors which have influenced the tuberculosis rates in the various counties indicates that the counties with the most favorable rates have spent a substantially larger per capita amount of money for tuberculosis control than have the nine counties with the highest rates. In two of the nine counties with the lowest rates, Ogle and Woodford, money has been appropriated from special tax funds for tuberculosis control work and funds raised by voluntary agencies have been much greater than in those counties with the highest rates.

Two counties, Morgan and Sangamon, among the nine with the highest rates, have expended funds from tax levies also. Sangamon, however, abandoned the tax levy some years ago and the

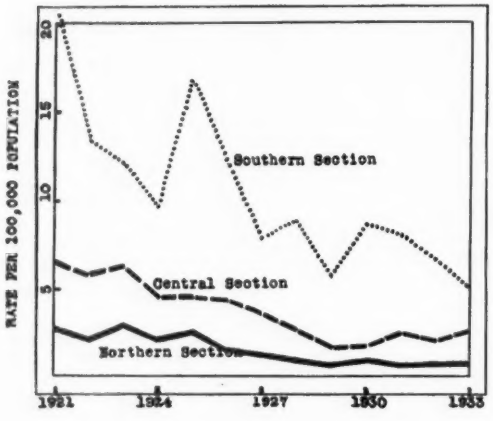
tuberculosis rate in the non-institution population of Morgan has improved to a marked degree.

Among the fourteen counties with over 100,000 people, nine have public tuberculosis sanitariums and all but three, Lake, DuPage and St. Clair, have made tax levies for tuberculosis work. Two of the three, Lake and DuPage, have been able to raise substantial funds through voluntary agencies.

The evidence appears conclusive that the death rate from tuberculosis has declined most rapidly in those counties where the greatest amount of money has been spent for control activities.

TYPHOID FEVER

Mortality from typhoid fever has followed a strong downward trend in Illinois since 1918. In that year the death rate attributed to this disease was 8.2 per 100,000 population, compared



TYPHOID MORTALITY IN ILLINOIS 1921-1933

Fig. 7

with 1.4 in 1933, these being the highest and lowest rates for any year in the period covered.

While the improvement has not been uniformly great from a geographical point of view, the statistical evidence indicates a very marked decline in all parts of the State. It appears that even in those counties which now experience the highest losses there are fewer cases and fewer deaths by far than in 1918. Thus in the twelve counties which had the highest rates in 1933 the average mortality was 17.3 per 100,000 population against an average of 32.5 for the same counties in 1918. Furthermore, in only one county, Hardin, was there a 1933 rate in excess of 20 per 100,000 population, while in 1918 no less than thirty-one counties had rates of that magnitude.

Only twelve counties in Illinois experienced fatal losses from typhoid fever of 10 or more per 100,000 population in 1933. These are listed in Table 8. In 1918 no less than sixty-two out of one hundred-two counties in the State had death rates from typhoid fever of 10 or more per 100,000 population. Conversely there were fifty-three counties that reported no deaths from typhoid fever in 1933 and only ten in 1918.

The tendency has been for a more rapid improvement in the northern than in the southern portion of the State. All but Calhoun and DeWitt among the twelve counties with the highest 1933 rates are located in the lower southern portion of the State.

TABLE 8., COUNTIES WITH DEATH RATES FROM TYPHOID FEVER OF 10 AND OVER PER 100,000 POPULATION IN 1933

County	Cases	Deaths	Death Rate 1933	Death Rate 1918
Hardin	5	4	57.4	67.2
Jackson	28	7	19.6	27.2
Wabash	2	2	15.2	49.8
Saline	30	6	16.1	32.6
Wayne	8	3	16.0	26.3
Randolph	12	4	13.6	20.6
Pulaski	7	2	13.4	13.6
Pope	7	1	12.5	41.5
Calhoun	5	1	12.4	48.5
DeWitt	16	2	11.0	5.2
White	5	2	11.0	34.8
Johnson	1	1	10.0	24.9
Total	126	35	16.0	25.7

If the State is divided into three geographical units of about equal land area it is found that the proportionate improvement with respect to typhoid fever has been greater in the northern and southern than in the central third. While the prevailing death rate in the southern third, as may be observed from Table 9, is nearly nine times greater than that in the northern and more than double that in the central third, still the degree of improvement has been greater in the southern than in the central area since 1921. A comparison of the sectional rates of 1933 with those of 1921, as shown in Table 9, shows an improvement of 77 per cent. in the northern sec-

tion, 76 per cent. in the southern section and only 63 per cent. in the central section. The trend of mortality in the three sections is shown graphically in Fig. 7.

TABLE 9., MORTALITY FROM TYPHOID FEVER BY SECTIONS IN ILLINOIS

	33 Northern Counties		35 Central Counties		34 Southern Counties		State	
Year	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1921.....	118	2.6	73	6.3	199	20.7	396	6.0
1922.....	87	2.0	68	5.9	128	13.3	283	4.2
1923.....	134	2.9	70	6.1	115	12.0	319	4.7
1924.....	95	2.0	50	4.4	94	9.7	239	3.5
1925.....	112	2.3	50	4.4	164	16.9	326	4.6
1926.....	65	1.3	48	4.3	117	12.0	230	3.2
1927.....	58	1.1	40	3.5	77	7.9	175	2.4
1928.....	44	0.9	30	2.6	86	8.9	160	2.2
1929.....	37	0.7	18	1.6	55	5.6	110	1.5
1930.....	50	0.9	21	1.8	83	8.5	154	2.0
1931.....	29	0.5	25	2.2	79	8.0	133	1.7
1932.....	35	0.6	24	2.0	66	6.7	125	1.6
1933.....	33	0.6	27	2.3	50	5.0	110	1.4

Rates per 100,000 population.

The relative freedom of Chicago from typhoid fever is an important factor in the favorable rate for the northern section of the State. This, however, is by no means the full explanation for the favorable showing in that region. Out of the 33 counties in the northern third of the State, for example, only ten reported any deaths from typhoid fever in 1933, while eighteen out of 35 counties in the central third and twenty-one out of the 34 counties in the southern third reported deaths from typhoid fever in 1933. Furthermore, for the ten counties in the northern third that had losses, the average death rate from typhoid fever in 1933 was 2.4 against an average of 5 in the eighteen central counties and an average of 11.1 in the twenty-one southern counties that had losses. The deaths and rates in each county, listed according to geographical section, are presented in Table 10. The rates shown in Table 10 are based upon the population of each entire section, thus giving a much lower rate for the section than the average for the particular counties in the section that had losses from typhoid fever.

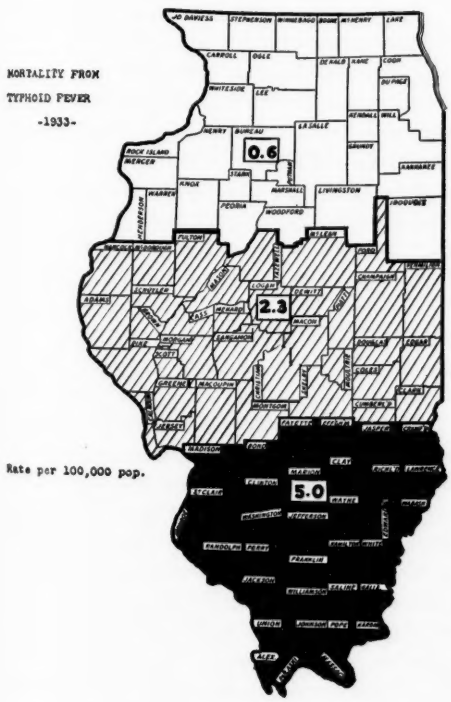


Fig. 8

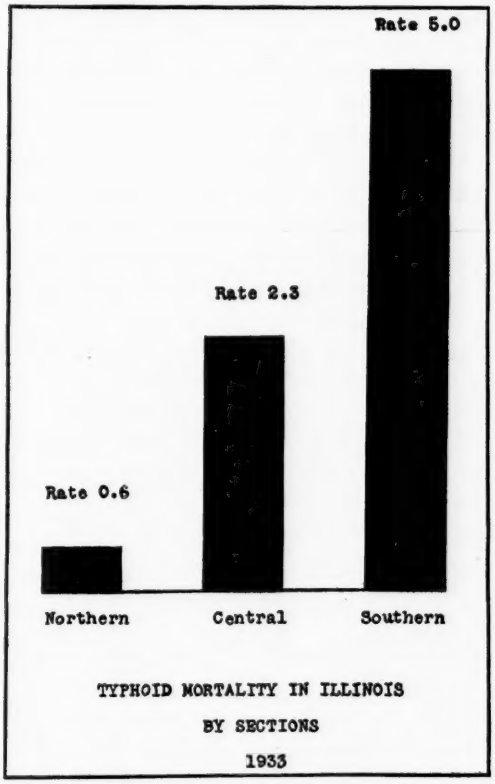


Fig. 9

While improvement has been rapid in all parts of the State, it is apparent from Table 10 and Figures 7, 8 and 9, that nearly one-half of all

TABLE 10., MORTALITY FROM TYPHOID FEVER BY SECTIONS IN ILLINOIS

Northern Section			Central Section			Southern Section		
County	No.	Rate	County	No.	Rate	County	No.	Rate
Cook	13	0.3	Adams	1	1.6	Alexander	2	8.9
Kankakee	2	3.9	Calhoun	1	12.4	Effingham	1	5.3
Knox	1	1.9	Cass	1	6.0	Fayette	2	8.5
La Salle	2	2.1	Christian	3	8.0	Franklin	4	6.7
Lake	2	1.8	Clark	1	5.6	Hardin	4	57.4
Ogle	1	3.5	Coles	2	5.3	Jackson	7	19.6
Peoria	1	0.7	DeWitt	2	10.9	Jefferson	1	3.2
Rock Island	2	2.0	Edgar	1	4.0	Johnson	1	9.8
Will	7	6.1	Fulton	2	4.6	Madison	1	0.7
Winnebago	2	1.6	Hancock	1	3.8	Marion	1	2.8
			Macon	1	1.2	Massac	1	7.1
			Montgomery	1	2.8	Pope	1	12.5
			Morgan	1	2.9	Pulaski	2	13.4
			Piatt	1	6.4	Randolph	4	13.6
			Pike	2	8.2	Richland	1	7.1
			Sangamon	1	0.9	St. Clair	3	1.8
			Shelby	1	3.9	Saline	6	16.1
			Vermilion	4	4.4	Wabash	2	15.2
						Washington	1	6.1
						Wayne	3	15.7
						White	2	11.0
Total	33	0.6	Total	27	2.3	Total	50	5.0

typhoid in Illinois occurs in the southern third of the State. In those 34 counties is concentrated the bulk of the typhoid fever problem.

An analysis of case reports of typhoid fever for 1931, which are typical, indicates that this disease is now an unsolved problem chiefly of small communities and rural districts. Thus, as may be seen in Table 11, the highest prevalence rates prevail in communities of less than 1,000 people and the lowest in the larger cities.

TABLE 11., CASES OF TYPHOID FEVER IN ILLINOIS, 1931

	Cases	Rates*
Communities of—		
Under 1,000	113	31
1,000 to 2,500	85	26
Farms	244	18
Cities of—		
5,000 to 10,000	68	17
2,500 to 5,000	34	12
10,000 to 200,000	133	8
Over 200,000	95	3

*Rate per 100,000 population.

While improvement in sanitary conditions, especially as they relate to water and milk supplies and sewage disposal, has been a dominant factor in preventing the spread of typhoid fever it would seem that the use of vaccines has been important in some areas. During the last four years, for example, the State Department of Public Health has distributed typhoid fever vaccine sufficient to immunize from 18,000 to 28,000 people annually. This is practically double the amount of typhoid vaccine distributed annually a decade ago.

OSTEOMYELITIS OF THE SKULL IN FRONTAL SINUSITIS

M. A. Glatt, M. D., F. A. C. S.
CHICAGO

Osteomyelitis of the frontal bone is a dreadful and highly fatal disease. Ballenger[1] in his textbook of diseases of the nose, throat and ear refers to Bulson's review in 1916 of 55 cases showing 37 fatalities. While it is not a frequent concomitant of frontal sinus disease, nevertheless, it is not a rarity. It is rare, however, following acute infections or operative procedures on the other sinuses or the mastoid, irrespective of the type of operation or the infective organism; neither is it as fatal as in the frontal bone.

There are certain anatomic characteristics of the frontal bone, which when understood, will explain the reason why the frontal sinus is more often the seat of complications than the other sinuses. These are as follows: The bones of the cranium including the frontal bone derive their greater blood supply from branches of the dural vessels within the skull and the venous return is by way of the intracranial venous sinuses. Intimate connection exists between the veins and the lymphatics of the frontal sinus mucosa with those of the dura and the meninges. The posterior wall of the frontal sinus contains numerous foramina for these veins offering a direct

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route of the infection to the meninges. At times dehiscences occur in the posterior wall of the sinus. The anterior wall of the frontal sinus, similar to the bones of the vault, is built of two plates. The medulla of these two plates contains tortuous channels (canalicular system) into which a network of veins fits (diploic venous system). These veins communicate with each other throughout the skull and also with the subdural space and the venous sinuses.

From the above anatomic description it is clear that an infection may travel directly to the meninges without involvement of the anterior plate or directly to the diploic veins and from there by a thrombotic process to the meninges with or without involvement of one or both plates. It also explains when an abscess is formed under the periosteum with an apparently intact outer plate, an extradural abscess may still be present as a result of the involvement of the diploic veins and the inner plate. The infection may also be transmitted by pressure necrosis and continuity of tissue or the two may be combined in the same case.

Reasoning from these anatomico-clinical facts a logical explanation is given that when an external operation involves the opening of the anterior wall of the sinus whereby the diploic vessels are exposed to the infectious process then the danger of osteomyelitis is thereby enhanced. It is stated that the stripping of the periosteum from the anterior wall is a contributing factor in the osteomyelitic process and that it is also interferes with the repair of bone.[2]

Although in my experience and that of others[3] with the Jansen-Lynch technic in frontal sinus surgery no osteomyelitis has resulted, it is, nevertheless, my impression that the Killian operative technic has been unjustly blamed for some of the cases, where osteomyelitis has occurred postoperatively.

When we accept the thrombophlebitic nature in the pathogenesis of osteomyelitis as it is clinically demonstrated in the two cases herewith reported, and as proven by Mosher and Judd[4] from a study of microscopic sections of the removed bone and the mucosa, we can then explain the occurrence of osteomyelitis in the mild or severe flareups to which a chronic frontal sinusitis may be subject, or where the process is insidious for months and becomes evident after minor or radical operative procedures. Wilensky[5] states that it occurred even by following the Jansen technic.

In my first case report in particular, it will be seen that had the Killian type of operation been carried out, and the sequestra recovered at a later date, there would have been an erroneous impression that the operation was the cause of the osteomyelitis.

That the periosteum plays a minor role can be argued from the fact that the skull is nourished mostly by the dural vessels, that the regeneration of bone as proven by Furstenberg[6] takes place from the bone cells attached to the dura. Furthermore, the surgeon can easily avoid the criticism by limiting the retraction of the periosteum to the area of bone to be removed as cautioned by Yerger.[7] On the other hand, in the surgery of the mastoid process the periosteum is very often retracted beyond the operative limits; also where extensive subperiosteal abscesses result in much destruction of the periosteum, ill effects therefrom are unusual.

While the criticism of the Killian operation as being the cause of an induced osteomyelitis may have been justifiable in some of the cases, it has, regrettably, had an unfavorable influence on the external operation on the frontal sinus. The opposition to it is still more intensified when one comes to its consideration in the presence of an acute empyema.

A dilemma presents itself when one is confronted with a case of acute frontal sinus infection with signs of edema of the brow and forehead, formation of a subperiosteal abscess, or meningeal irritation.

Very little guidance can be obtained from the text-book references as to the systematic management of this entity, although an occasional mention is made of the external approach when threatening symptoms develop. That no clear conception exists in the treatment of such cases can be noted from reports of the recent literature.

With few exceptions, the treatment consists of palliative measures for the edema or the subperiosteal abscess; when the latter is finally incised, there is further delay in the opening of the sinus until the acute stage has subsided or when threatening symptoms still persist or develop.

Upon a close analysis of these case reports we

observe a variety of end results which are summarized as follows: 1. Complete healing of the wound after the drainage of the abscess, in spite of necrosis of the posterior sinus wall, thus giving a sense of false security, resulting in a fatal meningitis many weeks later. 2. A diffuse osteomyelitis with an extradural abscess six days after the evacuation of a subperiosteal abscess. 3. Incision and drainage of an abscess two weeks after the onset of the edema, repeated two weeks later; osteomyelitis of the anterior wall. 4. Subperiosteal abscess three days duration; onset of convulsions; incision with a release of pus through a necrotic lacrimal bone; four days later extradural, subdural abscess and meningitis by spread through a necrotic posterior wall of the frontal sinus. 5. Evacuation of a subperiosteal abscess five days after its onset; gradual development of encephalitis; frontal lobe abscess discovered four days later; fatal end.

It is obvious that in some of the cases the complication was present at the time of the onset of the edema and the subperiosteal abscess, which followed after a shorter or longer period of the infection in the sinus, while in others the delay in the radical sinus surgery may have been a contributing factor in the final outcome.

The favorable cases are those, which when the abscess is incised or ruptures spontaneously, result in a persistent fistula without any evidence of osteomyelitis of the anterior wall. There are others where the edema subsides quickly and has periodic recurrences with each flare up in the sinus. A stage is reached when a sclerosis of the walls prevents the formation of a subperiosteal abscess. This with a lack of the findings of tenderness may at times mislead one when an intracranial complication is impending at a future flare up.

The fear that an early intervention in any of the above groups of cases may provoke an osteomyelitis or a meningitis is due to the failure of evaluating the signs of edema and subperiosteal abscess as a sign that an extension of the infection beyond the sinus mucosa has already taken place. There is also the perplexity in our minds of reconciling radical surgery with an acute process.

At the proceedings of the scientific staff meeting of the Illinois Eye and Ear Infirmary of January 11, 1933, I stated as follows: "I feel that there should be a revision of the treatment of acute frontal sinus infections. Too long conservative treatment should not be persisted in when there is swelling externally, especially over the brow and forehead. When there is edema over the mastoid and sagging of the superior posterior canal wall in an acute ear infection we do not hesitate to operate, still we are conservative when it involves the frontal sinus. Some may subside with conservative treatment while in others the delay leads to a diffuse osteomyelitis or meningitis."

To clarify this viewpoint I may state that some of the clinicopathologic signs of this entity find their analogy in the acute surgical mastoid.

We know that resolution in a nonsurgical mastoiditis depends more or less on the pneumatization, being less frequent when the cells are highly pneumatized. If we may compare the frontal sinus and its outlet to the mastoid and the eustachian tube, the former as a highly pneumatized one cell or two cell structure and at times with an aberrant ethmoidal cell and having still greater dural surface in contact with it than has the mastoid, we can well infer the potentialities of the destructive process that may go on within it when there is insufficient or poor drainage during an acute infection.

Edema over the mastoid process and of the posterior superior canal wall which we term sagging, occurring during the course of a suppurative otitis media, has been accepted as the pathognomic sign of surgical mastoiditis. The edema of the brow and forehead associated with an empyema of the frontal sinus is in my opinion just as pathognomic of a surgical process which can be efficiently met with only by the external approach.

Mosher[4] in the March, 1933, issue of the *Laryngoscope* reports his studies of microscopic sections of bone removed from the areas showing edema over them and has demonstrated definite pathologic changes in the trabeculae of the bone. He arrives at the conclusion that when edema is found it is a sign that osteomyelitis is already present.

I am cognizant of dehiscences in the lacrimal and ethmoidal bones permitting a very early swelling of the lids during an acute ethmoiditis or of other extrasinus pathologic states requiring a differentiation. The frontal sinus edema is at

first limited to the insertion of the fibrous pulley of the superior oblique and to the origin of the corrugator supercilii muscle producing the typical swelling of the glabella and brow. In its extension it spreads to the lids and by lifting the periosteum also to the anterior wall of the same side and to that of the other side. In others the edema begins at the anterior surface of the sinus and later spreads to the lids.

The same factors which produce a subperiosteal abscess over the mastoid process, i. e., pressure necrosis of the cortex or a thrombophlebitis, or both, have been proven to be instrumental in the spread of the infection from the frontal sinus. Its presence over the mastoid process with or without the finding of an external fistula upon incision is an undisputed indication to the otologist for exposure and exenteration of the diseased cells, irrespective of the duration of the suppuration in the middle ear. Due to the sad experiences with the Wilde incision in the early history of the surgery of the mastoid process, it has long been discarded, regardless of the fact that occasionally it may still prove successful.

That the application of the same surgical principles in the frontal sinus is a rational procedure can be attested to by the successful results obtained where they have been practiced and by some of the unfortunate sequelae where there has been a long delay or fractional operations around or within the sinus.

The Jansen operative technic for the external approach to the frontal sinus is well suited in these types of cases. By opening only the floor of the sinus when intact or through a presenting fistula it lessens the possibility of a spread of the infection to the diploic vessels of the anterior wall. Drainage is provided externally and intranasally by removing the ethmoidal labyrinth and the ablation of the mucosa. Any necrotic bone found at the posterior wall of the sinus should be immediately removed, up to normal bone area.

While the opening of the frontal sinus through a fistula or through the floor without disturbing the mucosa may be considered as a step in the right direction, nevertheless, it still lacks the following important features: the removal of a suppurating focus, a dissolution of the communications of the thrombotic blood vessels of the mucosa and an immediate thorough inspection of the cerebral wall of the sinus. The proof of this assertion can be found in the numerous case reports, of which a typical one is that of Reeves:[3] A subperiosteal frontal sinus abscess was evacuated and drainage was established externally and into the nose by enlarging the external bony fistula and the insertion of a nasal tube without the removal of the mucosa. The symptoms of cerebral irritation still persisted until at the second operation performed ten days later the sinus mucosa was removed with the underlying necrotic posterior bony wall and the ethmoidal labyrinth.

It is very interesting to note that the teaching of Koerner in reference to the site of the complication being near the original focus in the diseased mastoid also finds its analogy in the frontal sinus. Excluding the instances where the complicating metastatic foci occur in areas remote from the sinus or in the fulminating diffuse types of osteomyelitis, the source of the spreading meningitis, of the subdural or brain abscess can be traced in the greatest number of cases to a necrosed posterior wall. In those where improvement followed after the discovery of a brain abscess it was usually due to obtaining better drainage in the removal of the posterior wall.

Thus, in the event of the manifestation of symptoms of meningeal irritation preoperatively or at a secondary operation our attention must be directed to the cerebral wall of the sinus in preference to other areas.

Any method of treatment which relegates the above discussed maxims to a secondary position, is not only impractical, but is often fraught with danger.

In the management of the focus in the anterior wall of the sinus and that of the frontal bone extending above it, there are, unfortunately, two extreme opposing viewpoints: the conservative group who are content with drainage and waiting for sequestration and the radical group advocating the extreme removal of bone far into normal areas.

The latter group headed by Mosher,[4] as a result of their histopathologic studies which I have referred to above, have evolved an operative technic aiming to combat the advancing process of the disease which they term as "getting ahead of the osteomyelitic process." This operation originally devised by Tobey consists of forming a

triangular skin and periosteal flap by making a vertical incision from the inner edge of the original Killian incision extending two inches above the area of the edema and reaching to or above the hair line and reflecting it outward. Trephining of the skull is begun in normal bone or if same appears doubtful a new area above it is resected. The dura is exposed and the remainder of the frontal bone, the anterior and posterior walls of the frontal sinus are removed with the exception of the ridge. The ethmoidal labyrinth is exenterated and drainage is provided intranasally and externally.

This operative technic has been tried in seven cases, but unfortunately what seemed highly plausible from a theoretical standpoint, practically has been successfully carried out by the authors only in one case as a single procedure. The poor condition of the patient, the necessarily prolonged anesthesia with much loss of blood have hindered the completion of it as a one stage operation. Thus, the infected focus below, which had to be dealt with at a second operation when the patient's condition permitted, often acted as a reinfecting agent to healthy exposed bone above.

Since this method may be termed a "fortified Killian operation" which requires the preserving of the bone at the superciliary ridge, it is even doubtful if the entire infected focus can be removed. Reinfection and sequestration can still take place.

However, this extensive removal of bone and exposure of the dura have been helpful in the early uncovering of an extradural or a subdural abscess. With its decompressing effect it has undoubtedly prevented a localized meningitis from developing into a diffuse form or into a brain abscess. This can be inferred from the fact that the focal signs suggestive of the latter, have often abated after the decompression. Such favorable observations have also been noted following extensive exposure of the dura in mastoid surgery where signs of localized meningitis were in evidence.

We surely cannot limit the thrombotic process in the diploic vessels nor can we prevent the further extension of the infection overlying the dura by waiting for sequestration. This condition also does not lend itself to an attempted comparison with the osteomyelitic process of the other bones of the body because the various measures adopted in their conservative treatment cannot be applied to the bones of the skull, in which the danger of an intracranial complication is a constant menacing factor.

I am aware that there are cases on record[9] where sequestration and healing occurred after conservative treatment without any ill effects arising during its course in extensively involved bone. I have knowledge of a case of traumatic osteomyelitis of the skull where sequestration and regeneration have been going on for the past 11 years with neither a cure nor a complication. Nevertheless, one cannot be impressed with this as a rational procedure in all types of cases. On the other hand, I must also make exception in some of the cases where extreme radicalism is not justifiable and where the pursuance of a more conservative policy is preferred.

I realize the shortcomings of generalization or of laying down certain rules governing the treatment of osteomyelitis, especially, when we take into consideration the cases where one type easily merges into another; the physical condition of the patient; the individually inherited local and general body resistance; also the age of the patient affecting a natural local limitation of this malady to suture lines. It is, therefore, with a great deal of hesitancy that I offer the two types which are based partly on anatomical boundaries and partly on clinical signs.

It will be noted that I followed a conservative policy with favorable results in the treatment of the focus of the anterior wall in the two acute cases herewith reported after an early and radical removal of the sinus mucosa and establishment of drainage through the floor as described above.

I may state in this connection that I also obtained the same results in the chronic cases which presented themselves with fistulae and questionable x-ray findings of the anterior wall of the sinus.

We thus have a group, in which the edema or the x-ray findings shows the process to be limited to the anterior wall, when waiting for sequestration is not associated with much danger, providing that the focus in the sinus mucosa has been completely removed and that good drainage has been provided.

In the second group we may include those cases

which require immediate radical removal of the diseased bone from the anterior wall of the sinus and that above it. These are as follows:

(a) When there is no improvement or there is an aggravation in the general symptoms, or where the edema still persists or is spreading after the operative procedures in type one.

(b) Where the x-ray studies show definite bone destruction above the limits of the frontal sinus.

(c) Distant osteomyelitic foci manifested by cyclic periods of quiescence and recurrence in the general symptoms and in the doughy swelling.

(d) The early or late fulminating diffuse type of osteomyelitis.

(e) Onset of meningeal irritation, cerebral pressure symptoms or sinus thrombosis.

In this group it is a serious risk to pursue a conservative policy. Although it is then highly desirable to remove the infected area in one session, but, since the condition of the patient may prevent it, it is more practicable to begin with the exploration of the infected sinus. Should the patient's condition permit, then the other sinus may be opened if deemed necessary, and the bone removal begun from the anterior wall. If forced to stop before the completion of the operation then there is at least the satisfaction that good drainage and an inspection of the posterior wall have been accomplished.

Those who have had the experience with the technic of the exposure of the dura in mastoid surgery will find it easier and will perform it much more quickly in a one stage operation by working upward, than by starting from above by the use of trephines which requires expert technic and consumes valuable time.

I feel that this paper cannot be complete without reference to injuries in or about the frontal sinus. Since the prevalence of mild or latent sinusitis is the rule rather than the exception, then an injury to it must be looked upon with much concern. Time does not permit to dwell at length on the treatment. A concise statement may be made as follows: When the fracture is limited to the anterior wall in an apparently healthy sinus, it should be left alone. When infection sets in the sinus after the injury, or the fracture occurred in an infected sinus, it is to be considered as an osteomyelitis and treatment instituted as outlined above.

The following histories of two patients, who developed an osteomyelitis of the frontal bone in an acute frontal sinusitis, are selected from a group of others who were under my care, to illustrate the practical application of the above enumerated principles.

Case 1. Mr. L. W., aged 34 years, was first seen by me in consultation at his home with Dr. J. Caulfield, on July 15 1932. The history was that of a left sided pansinusitis of 10 days duration that came on after swimming in an inland lake. No history of previous nasal trouble. Conservative treatment brought no relief. For the past 3 days there has developed a progressive edema of the face, forehead and eyelids of the left side and which extended to the lids of the right eye.

The intranasal structures were extremely edematous, bathed in thick pus and all landmarks were obscured. Shrinkage was not successful. It was evident that the infection had spread beyond the confines of the sinus cavity, that conservative treatment could not be prolonged and that any intranasal manipulation, besides being a hazardous procedure in an obscured field, would be insufficient to cope with this pathologic state.

An external frontal sinus operation under ether anesthesia was performed by me at the St. Francis Hospital, Evanston, Ill., on that day. A large subperiosteal abscess was uncovered. Pus escaped under pressure upon opening the intact floor of the sinus. All necrotic mucosa and the greater part of the floor were removed. A profuse discharge followed after opening the left antrum intranasally. No attempt was made to retract the periosteum over the anterior wall of the sinus in search for a fistula nor was the ethmoidal labyrinth disturbed. Examination of the pus and culture showed the Staphylococcus albus to be the causative organism.

The postoperative course was uneventful. The external incision healed with the formation of a fistula through which a few drops of pus drained daily. Two pieces of loose bone were subsequently removed from the middle meatus. The advice for further study and exploration of the operative area was deferred by the patient for five months when he became alarmed at the evidence of loose bone at the fistulous opening. X-ray study revealed sequestra of the superciliary ridge.

The second operation was performed by me on Dec. 19, 1932. The sequestra were removed and the complete details of the radical frontoethmoidal operation according to the Jansen-Lynch technic were carried out. In retracting the periosteum along the lacrimal bone and the os planum, a defect was noted which corresponded to the two sequestra removed from the middle meatus as stated above. The usual intranasal and external drainage was instituted. Healing occurred within three weeks with only a dimple-like depression at the inner angle. There has been no recurrence up to the time of this report.

Comment: The short duration of the acute sinus infection in relationship to the onset of the osteomyelitis and the location of the seques-

tra point more to a thrombophlebitis than to pressure necrosis as the pathogenesis. Whether a diffuse osteomyelitis would have resulted in this patient by adopting the Killian approach is difficult to state. Since such a complication has been known to occur following that method for the cure of the chronic types of frontal sinus infection, the anxiety of following such a technic is naturally accentuated when confronted with an acute process. However, the fear of inducing a diffuse osteomyelitis must be subordinated to that of the greater danger calling for the immediate relief of pressure and the removal of the diseased focus within the sinus. Furthermore, the approach through the floor greatly diminishes this possibility. The sequestra removed were the result of the original infection in the bone and surely cannot be ascribed to the first operation.

Case 2. Miss M. P., aged 16 years, was admitted to the Illinois Eye and Ear Infirmary on November 12, 1932, with a diagnosis of acute frontal sinusitis. The history states that she, a non-resident of this city, has never been subject to colds until eight days ago when she developed a sore throat and a head cold. The past three days there appeared a painful swelling over the right eyebrow. Temperature upon admission 101.2 F. Rhinoscopy revealed well defined nasal structures, with thick creamy pus in the middle meatus, and a tender, doughy, cushion-like swelling about ½ inch in diameter was noted over the right supercilliary region. X-ray examination revealed a pansinusitis of the right side. The temperature returned to normal after one week of conservative treatment, while the swelling and the nasal pus discharge still persisted. With the idea of promoting better draining the anterior end of the middle turbinate was removed on the eighth day of a normal course in the temperature. The next day the temperature reached 104.2 F. and returned to normal on the fourth day. This fever was traceable to an infection in a right tonsil stump. On December 6, after an interval of 5 days of normal temperature and four weeks after the onset of the original circumscribed edema of the superciliary arch, there developed a severe edema of the lids and forehead of the right side and partly extending to the left side.

An external frontoethmoidal sinus operation under ether anesthesia was performed by me that day using the Jansen-Lynch technic. There was no subperiosteal abscess. Pus escaped under pressure upon opening the floor of the sinus. The floor as well as the entire mucosa of the sinus were removed. The posterior wall was found intact. In removing the mucosa from the anterior wall an area of soft bone and necrotic periosteum, corresponding to the original doughy swelling came away readily with the slight touch of the dull ring curette. The intersinous septum was partly deficient, but the left side was not explored. The ethmoidal labyrinth was removed and intranasal drainage instituted. The maxillary sinus was drained through a nasoantral opening several days later. Unfortunately, the culture of the pus of this case was lost; however, repeated cultures (at a future date) as noted below revealed the Streptococcus hemolyticus. The temperature and swelling subsided and healing proceeded satisfactorily. On January 21, six weeks afer the operation, the patient developed scarlet fever and had to be removed to the Contagious Hospital. Three months later there were persistent findings of hemolytic streptococci from the granulation tissue at the external fistulous tract. The patient left the city, and I am, therefore, unable to report the final outcome. Nevertheless, from the standpoint of my thesis, there is sufficient important information to make this report worth while.

Comment: It is interesting to note the early onset of osteomyelitis which followed five days after the onset of acute frontal sinusitis, without a previous history of infection in the sinus. This would point to a thrombophlebitis as the pathogenesis. When that occurred no form of conservative treatment was of avail. The external exposure of the sinus within 24 hours after the onset of the edema of the forehead and lids was a safe procedure and possibly prevented further complications. I believe that an interference at still an earlier date would have proved just as safe as it did in the previous patient.

Summary: Most cases of acute frontal sinus infections have been known to respond favorably to conservative treatment as outlined in the specialty text-books. However, there are cases, which, regardless of the treatment instituted to promote drainage, go on to a stage indicative of an extension of the infection beyond the limits of the sinus. This manifests itself after a shorter or longer period from the onset of the original acute sinus symptoms into an edema of the brow and forehead, formation of a subperiosteal abscess or signs of meningeal irritation.

Due to the unfortunate results in a number of patients who developed a diffuse osteomyelitis as a consequence of the radical operation undertaken for the cure of their chronic frontal sinusitis, the fear of the external approach is therefore accentuated when one is confronted with an acute process. This leads to prolonged conservative treatment and ineffective minor fractional operations.

This misapprehension is due to a lack of evaluating the above symptoms as a sign that either an osteomyelitis is already present or that a ne-

crosis of the dural plate of the posterior wall of the sinus or that of the frontal bone above has already taken place.

An analogy is made of each clinicopathologic sign including the complications of this entity with that of surgical mastoiditis in order to prove that an early external approach is a rational procedure in these cases. We may also deduct that this intervention carries with it an element of prophylaxis in that it may prevent in some cases the further extension to a diffuse form of osteomyelitis or that it may lead to an early discovery of a necrotic posterior wall of the sinus, whence most of the intracranial complications originate. Furthermore, the Jansen-Lynch operative technic for the external approach to the frontal sinus, which has proven successful in the chronic cases and rarely caused postoperative complications, can be applied in these cases with much safety.

While the simultaneous complete eradication of the infection in the sinus and its walls is a most desirable aim to be achieved, still from my own experience and that of others, I may state that there is a type where waiting for sequestration after drainage has been accomplished, is to be preferred. There is, however, another type where waiting for sequestration is associated with much danger. The particular differentiation of each type has been described.

Another group of cases which are to be treated on the basis of osteomyelitis are fractures of the frontal bone through an infected sinus or when the latter becomes infected after the fracture.

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DISCUSSIONS

Dr. C. F. Yerger, Chicago, Ill.: I enjoyed Dr. Glatt's paper very much and he is to be congratulated on his review of the literature. In this connection I wish to emphasize a few points.

We must remember about not operating on acute cases of frontal and in acute exacerbations of chronic frontal sinusitis. These cases should be left alone as far as possible, until more favorable conditions arise, and we should operate only when we are forced to do so under these unfavorable circumstances. The cases may be divided into groups—the spontaneous group, those which occur spontaneously following acute nasal sinusitis, or, the acute exacerbation of chronic nasal sinusitis. Those that occur following operation we classify as post-operative. It is a well known fact that the post-operative cases exceed the spontaneous cases by at least 25 per cent. That shows the added danger of operating on these cases of acute frontal sinusitis or acute exacerbations of chronic frontal sinusitis. I want to emphasize that if you do an external operation on an acute case you can expect trouble and even in chronic cases you are more apt to get into trouble than if you do some intranasal operation. If you take away the turbinate or enlarge the frontonasal duct from the inside of the nose, you do not run as much risk of osteomyelitis. Why is that? Schilling thought if you attack the anterior bony plate of the frontal sinus wall at the superior external border you get an extension into the diploe of the frontal bone, and you open up the diploic spaces in the frontal bone to infection. You can get continuation of that process either by continuity of the bone infection, or by hematogenous infection, that is, by infection of the diploic vessels, and can develop spots of metastatic infection that are separated from each other. I also would like to emphasize the fact that when you are forced to operate on chronic cases of frontal sinusitis, I think it is preferable to do the Jansen-Lynch operation, rather than the Killian type of operation. The lower plate of the frontal bone is not so dangerous to attack surgically, because you do not open the diploic chain of vessels and you do not infect the diploe or the middle plate of the skull.

These cases are not common. All I could find in the literature was about 125 cases of osteomyelitis of the skull secondary to nasal sinus disease. We must be sure to differentiate syphilitic osteomyelitis. Syphilis of the frontal bone is not uncommon, syphilis is very prone to affect the frontal bone, and also in some of these chronic cases of osteomyelitis we can have tuberculosis of the cranial bones, which is rare to be sure, but it does occur. You must keep in mind the things that can occur, although they are probably not as common as those which are secondary to sinusitis. The following two cases are instructive and illustrative of the different types.

Case 1. Progressive osteomyelitis of the frontal bone secondary to an external frontal sinus operation five days previously for an acute suppurative frontal sinusitis.

This boy, age 12, five days previously had a right external frontal sinus operation at another hospital. He improved for four days following the operation, but on the fifth day he became delirious. On admittance to the otolaryngologic department of Cook County Hospital, on February 12, 1924, the physical examination showed a poorly nourished boy in a stuporous condition, from which he could be aroused, but would quickly relapse into his previous mental state. A soft edema was present involving the scalp over right and left frontal, parietal and zygomatic regions. There was marked edema of the right and left eyelids. The white blood count was 27,000. The spinal fluid showed 52 cells, mostly leukocytes. There was fever of 100 degrees. Operation was performed the next day. The incision extended across the eyebrows and glabella. The anterior plate of the right frontal sinus had been removed at the previous operation and the sinus was found full of thick creamy pus. The anterior plate of the left frontal sinus was now removed and the left sinus found filled with the same kind of pus. Cultures of the pus showed Staphylococcus aureus. Both naso-frontal ducts were enlarged by curettement of the anterior ethmoid cells and rubber drainage tubes were inserted into the enlarged naso-frontal ducts. The wound was packed with gauze but not sutured. The following day he became wildly delirious and had a fever of 102. Three days later his sensorium became clear. He continued to have a fever of from 1 to 3 degrees for a period of twenty days following the operation. Nine days after operation he developed an abscess in the right pectoral region which was opened and drained. After two months in the hospital he was discharged and treated in the outpatient department, but was readmitted two months later on account of fistula formation with continued suppuration due to the presence of sequestra. A second operation was now performed, the old incision was reopened, the skin being carefully dissected from the dura. A small extra-dural abscess was found on the right side. The two fistulae in the right and left supraorbital regions were curetted free from granulations and two large sequestra were removed and the wound was packed with gauze. A discharge of pus continued from the fistula located at the glabella and also from a fistula located at the midline just within the hairy scalp. There was a subcutaneous abscess present in the region of the superior fistula which communicated with the inferior fistula, as was demonstrated by pressure on the superior swelling, which caused the pus to flow from the inferior fistula. A third operation was necessary two months later on account of the presence of sequestra as shown by the roentgenogram. Two thin sequestra 1 by 3 cm. in size were removed. The superior fistula communicated with a circumscribed osteomyelitic area 2 by 2 cm. which was filled with granulation tissue. Normal bone separated the intervals between the area of bone necrosis and the area previously operated on of osteomyelitis to the extent of 4 cm. proving that the process, in this instance at least, was due to a hematogenous metastasis from a thrombophlebitis of the diploic veins and not to involvement by continuity of tissue, as had probably occurred in the area previously operated on. A roentgenogram taken one month later showed shadows suggestive of sequestra and six weeks later two sequestra the size of the little finger nail were removed from the superior fistula from which pus had been discharging. Subsequently there has been no recurrence of sequestration, and the patient has been cured for over ten years.

Case 2. Progressive osteomyelitis of the frontal bone secondary to syphilis.

This man, aged 51, entered the otolaryngological department of Cook County Hospital on September 18, 1924, with the history that six months ago he developed an acute swelling over both maxillary and frontal regions, which was followed by the formation of a fistula on each side of the glabella. One month later an abscess appeared over the left supraorbital region which was followed one week later by an abscess over the right supraorbital region, both of which opened spontaneously and discharged pus. He stated that he had had a saddle-back nasal deformity for the past twenty-four years, which he said followed a nose operation. He also stated that he had had intensive treatment for syphilis and had a positive blood Wassermann test.

Examination showed marked swelling with induration and hyperemia over both maxillary and frontal regions, with discharging fistulae, one on each side of the root of the nose and in each supraorbital region. The discharge consisted of a creamy pus which on culture showed gram positive diplococci in chains. The right eyelids were swollen shut. The nasal examination showed an extensive perforation of the nasal septum. There was a saddle-back deformity of the external nose. The blood Wassermann test was negative. The roentgenogram showed extensive diffuse osteomyelitis of the frontal bone.

Operation: A bilateral supraorbital incision was made, connecting over the root of the nose and extending bilaterally upward along both temporal crests to the hair line at the vortex of the skull. A modified bilateral Killian frontal sinus operation was performed. Necrotic portions of the frontal, nasal, and vomer bones were removed. An extradural abscess was found and drained. The dura was covered with edematous granulations which were removed. Ten days later, a fluctuant swelling presented over the upper part of the forehead. A fistula over the left mid-frontal region was opened and one ounce thick, creamy pus was evacuated. Twenty days after the second operation, a sequestrectomy was done because of the positive roentgenographic evidence of sequestra. The former incision was opened and several sequestra and granulations were removed. Following the sequestrectomy the patient has remained well to date.

Dr. J. R. Lindsay, Chicago: I wish to compliment Dr. Glatt on his discussion of acute osteomyelitis complicating acute frontal sinusitis. His paper has been chiefly concerned with the early management of the case of acute frontal sinusitis, which presents itself with the signs of a beginning complication, as evi-

denced by edema of the brow, eyelid and forehead, and with or without signs of extension to the meninges. The chief point which he has emphasized has been the necessity for early operative intervention by the external route, with complete removal of the mucosa, exposure of the posterior wall, and completion of the radical operation at the first sitting. The remarks which I have to make will therefore be confined to the early management of this type of case, and are based on personal experience with six cases of acute osteomyelitis, complicating acute frontal sinusitis, four of which were patients in the University of Chicago Clinics.

The frequency with which acute frontal sinusitis, with edema of the superficial tissues, develops a spreading osteomyelitis, and the high mortality which has attended both conservative and radical methods of treatment, has made this a much to be dreaded condition. In this respect, the comparison with edema and subperiosteal abscess over the mastoid as made by Dr. Glatt has a stronger significance, in that a spreading osteomyelitis as a complication of an acute mastoiditis is relatively rare, whereas in the case of the frontal sinus, for reasons which are not as yet clear, the appearance of edema is commonly the first sign of beginning osteomyelitis. When edema of the brow and forehead appear, the release of the pus from within the sinus and provision for adequate drainage, is the first essential. As to how early operative interference should be undertaken, and how radical the procedure should be, opinions differ.

With regard to the danger of opening up new pathways for infection in the diploe of the bone by early operative interference, I wish to call attention to the method used by Beck of Heidelberg in the treatment of uncomplicated acute frontal sinusitis, as reported in the Ztschr. für Laryngologie Rhinol. Otolog. und ihre Grenzgebiete, January, 1934. The external plate is drilled through and a cannula inserted and left in place for the purpose of irrigation until the acute attack is passed. The lack of the development of osteomyelitis or other complication following this procedure in hundreds of cases, as reported by Beck, should provide some reassurance when one is confronted with the necessity of providing drainage by operative means.

Although opposed to operative interference in the case of simple acute frontal sinusitis, I agree with Dr. Glatt that when edema of the brow and forehead appear, the urgent necessity of providing adequate drainage from the sinus supersedes any possible danger from opening new pathways of infection as a result of trauma. As to the necessity or advisability of carrying out the complete external frontal operation, with removal of all the mucosa, in every case of this type as soon as the edema has made its appearance, as recommended in Dr. Glatt's paper, I do not believe that a hard and fast rule can be laid down. For instance, in the case which develops frontal sinusitis suddenly, without having had a previous attack, and in which the mucosa of the sinus had not been previously diseased, if the appearance of the edema is followed promptly by providing adequate drainage from the frontal sinus by means of an external opening, large enough to allow inspection of the mucosa and posterior wall, it is probably safer procedure to postpone further steps of the operation until the acute stage has passed over. Washing out of the antrum is advisable at the same time. In those cases where one is dealing with a recurrence or an exacerbation of the chronic sinusitis, and where the mucosa is found to be hyperplastic and polypoid, the removal of the diseased mucosa is an essential part of the operation.

While it is not safe to draw conclusions from a small number of cases, a brief summary of the following cases from the University of Chicago Clinics will illustrate these points. Of the four cases two recovered and two ended fatally. Of the two which recovered, both were patients suffering from the first attack of frontal sinusitis. One followed a severe cold, one followed swimming. Both developed marked edema of the brow and forehead. One had the complete radical operation according to the Lynch technic four days after the onset of edema. The patient was last seen four months afterward, apparently cured. The other had a small subperiosteal abscess opened and an opening about 1½ cm. in diameter made into the frontal sinus. Mucosa not removed. Both antra were later washed and ethmoids removed in three weeks. Complete recovery in six weeks. Small scar removed one year later. It is probable that, provided the external drainage is made promptly after onset of edema, simple drainage may be the wisest step as the initial procedure.

Of the two cases which terminated fatally, both developed osteomyelitis as a result of an acute exacerbation of an old chronic sinusitis. The first case died from meningitis, ancephalitis and frontal lobe abscess. Edema of the superficial tissues did not appear, but a complete radical operation with removal of sequestra from the posterior wall, was done as soon as signs of meningeal irritation were evident. This patient had had an intranasal operation six years previously, but had been subject to periodic acute attacks afterward. The patient ought to have had a radical operation much earlier, but at the time he presented himself at the clinics, it was obvious that only thorough radical measures offered any hope for recovery. The other fatal case was also an acute osteomyelitis developing with an acute exacerbation of an old chronic sinusitis with fistula.

The operative procedures carried out in this case were along conservative lines for over three months until signs of meningeal involvement appeared, when radical removal of the diseased bone from the frontal area was carried out. The patient died of meningitis. Judging from the results obtained by McKenzie, Furstenberg and Mosher, it seems probable that this patient would have had a better chance for recovery if more radical operative measures had been instituted at the onset of the osteomyelitis.

The last x-ray shows an osteomyelitis of several years' standing following an acute frontal sinusitis. Operative treatment for the osteomyelitis had been of the conservative type. The patient developed osteomye-

litis in many other bones of the body with marked deformities. This case came to the clinics after the acute stages were past, hence I have no comment to make regarding the treatment, but merely show the x-ray to illustrate this type of complication.

As one reviews the cases that have been reported in the literature both under conservative and radical management, one is led to the conclusion that the hope for better results in the treatment of the acute frontal sinus complication lies in more prompt interference surgically, as soon as the signs and symptoms indicate the beginning extension of the disease through the wall of the sinus.

Dr. M. Reese Guttman, Chicago: Dr. Beck and I have seen six of these cases with two deaths, and I would like to discuss the clinical management of osteomyelitis. This slide illustrates something of the pathology you have. The marrow spaces have been filled with a purulent exudate with evidence of fibrous healing. Some blood vessels have undergone occlusive thrombosis. Here is the extent of the osteomyelitic lesion.

Concerning the time of operation:—We lost two cases which were operated on too early. From the slide you can see how these spread. If you operate early, before localization occurs, any surgical trauma may spread the lesion. You are then confronted with meningitis or other intracranial complications. Both our cases expired with a meningitis as the operation was performed within a short time after the spreading osteomyelitis made its appearance. This teaches us that early, before limitation of the inflammatory process has occurred, any trauma may cause death. Four cases got well. We waited two to three weeks. The primary lesion and swelling were not more than the size of a half dollar in extent, yet the osteomyelitis showed a very extensive area of invasion. So you can see why the second point is made. Operate at the proper time. In the subacute stage you must go beyond the confines of the actual limitation of the process. The tissue you saw apparently looked grossly normal to both Dr. Beck and myself, yet microscopically it showed marrow spaces filled with pus. We should limit our surgical enthusiasm; wait, as we do in a mastoid, two or three weeks, unless there is evidence of a brain abscess, meningeal abscess. Usually the parents are anxious to have something done and it takes courage to wait, but it should be done.

Dr. H. L. Ford, Champaign: There are some questions I should like to ask Dr. Glatt. Would it not be possible to compare the thrombophlebitic process in some cases with the similar type in a mastoid? Prophylactic trephining at the base of the edema is supposed to be an advance in treatment—or is that the opinion? Edema of the eyelids—what does that mean? If it does not involve the forehead it can very frequently be handled by conservative measures.

Also why does osteomyelitis occur more frequently in children than in adults? I have had two cases in children, both of the frontal type, at least four inches above the orbital rim. One died, one recovered. It seemed to me that no surgical measures could be employed in such cases. In determining the type of operation, rather, than to saying one should do the Jansen-Lynch operation would it not be better to take into consideration the shape and size of the sinus from the x-ray standpoint before deciding on the procedure? In an acute fulminating case would it not be well to trephine at the limit of the edema?

Dr. Joseph Beck, Chicago: So much has been said by the discussors, particularly by men who have had a great deal of experience—what can I add? I would like to comment on Dr. Ford's remarks as to the trephine point that Mosher makes. As to its stopping the spread of infection—it is not exactly as he puts it. You might get the wrong viewpoint. He, Mosher, has found clinically, and I have seen it myself, that the edema is an important factor in that type of osteomyelitis, the phlebitic type. The edema is about two fingers breadth ahead of the diseased process, so that your incision must be further away than the x-ray picture would indicate as to the extent of the disease. Dr. Guttmann showed you the sections of tissue which was removed and which we thought at operation was healthy—yet the histopathology shows you what it is, namely diseased.

What I got out of this discussion and the paper, and what you should also have gotten are two important facts: It is frequently a staphylococcic infection and we are accustomed to say that such infections are milder in character than strep. The second thing is that it is not the type of infection in which you can wait for delimitation of the general process, as in osteomyelitis of the long bones. Do not be led away by the general surgeon who is talking about osteomyelitis of the long bones. We are not dealing with the same thing at all in osteomyelitis of the frontal sinus.

Dr. M. A. Glatt, Chicago (closing): I wish to thank the discussors for their help in clarifying and emphasizing the subject matter presented by me. Anyone's experience with these cases, no matter how extensive his practice or his clinic connections, is limited, and it is therefore natural when one is confronted with this problem, to draw upon one's knowledge from other areas of the body for guidance in the management of such a case. My thesis attempts to show the close analogy of this condition with the surgical mastoid, to prove thereby the urgent surgical character of this entity which calls for early intervention. I also wish to lead you away from the ultra-conservative attitude of those who attempt to compare this condition with osteomyelitis of the long bones. This analogy cannot be accepted in a narrow sense and it may be difficult to fit in the suggestion of Dr. Ford of the coalescent and hemorrhagic forms of mastoiditis with this condition.

Regarding edema of the lids not being a dependable sign in the diagnosis, I regret omitting the reading of that part of my paper dealing with the differentiation of the edema. Furthermore, in case of error in diagnosis, when after the evacuation of the abscess or after an incision before the abscess has formed, the sinus mucosa is found normal, there is very little to be feared from this exploration.

As to the question of the more frequent occurrence of this malady in children, it is quite true, especially of the diffuse form. This again emphasizes my statement as to the difficulty of laying down certain strict rules in the treatment of osteomyelitis where some cases have a natural limitation to suture lines, when some degree of conservatism can be carried out, while in children in whom the diploic vessels are more marked, there is communication across suture lines making such limitation less possible, and a conservative policy is rather hazardous.

Dr. Beck has answered part of the question with reference to the Mosher operation, and I may add herewith, in some cases the pathologic report showed that normal bone areas which were reached at the first operation became subsequently infected by the focus below. I brought this point out with the object of emphasizing the importance of giving precedence to the focus below.

In regard to Dr. Ford's question: The diffuse form, whether it starts as a progressive or a fulminating type, requires radical measures. Of course there are some where the virulence is high, the spread of the osteomyelitis and the intracranial complications occur in rapid succession, and it is quite obvious that a fatality is impending from the very start of the disease. To wait in these cases for the thrombophlebitis to subside or localize cannot be accepted as practical, when there are signs of edema which often heralds a subdural abscess, or when cerebral pressure symptoms call for an exploration and decompression.

In reference to syphilis complicating or in association with osteomyelitis of the skull, as brought out by Dr. Yerger, I wish to state that my experience is limited to two cases. In one, seen in the early days of my practice, I was inclined to ascribe the entire symptom complex to the syphilitic process for which he was then actively treated. The second patient, who was under my care at the Infirmary, presented a chronic pansinusitis with two fistulae in the floor of the frontal sinus. My impression from these cases is that, in conjunction with antisyphilitic treatment, the operative interference is not contra-indicated, and that we should not be misled by finding a positive Wassermann reaction.

With reference to Dr. Lindsay's citation of the work of Beck from Heidelberg, whose extreme radicalism in opening the anterior wall in acute uncomplicated cases of frontal sinusitis will, I am sure, not be followed by many in this country. I appreciate Dr. Lindsay's deductions and encouraging remarks as to the safety of opening the frontal sinus, especially when done through the floor and where there are definite indications to relieve the pressure within the sinus. I have given the reasons why the mucosa should be completely removed at the first operation. We usually see these cases when the mucosa has gone through a degenerative process and it is actually removed even by slight swabbing of the sinus. Since inspection of the entire cerebral wall is essential it naturally calls for removal of the mucosa. Judging from the apparent security of opening the anterior wall by Beck, we may consider the removal of the mucosa as a procedure still less to be feared.

MOSES GUNN, PIONEER CHICAGO SURGEON

NATHAN FLAXMAN, M. D.
CHICAGO

Moses Gunn, the youngest of four children, was born in East Bloomfield, Ontario County, New York, on April 20, 1822. He had a long chain of ancestors derived from a family clan in the northern part of Scotland. His father, Linus Gunn, was a prosperous and well-to-do farmer. His mother was Esther Bronson Gunn, born in Massachusetts. They were of strong character, very efficient and devout in their religion, Protestants. The name of Moses denoted a fondness of his parents for the famous biblical character.

Gunn attended the local schools until the age of 12 years when he was placed under the tutorship of a theological student who had become a member of the household. This relationship existed for three years when he entered the East Bloomfield Academy for a classical education. His schooling was interrupted by a serious illness, pleurisy and empyema, which made him an invalid for several years. He had an empyema necessitans which drained for many months. The family was advised to give him a change of air, so he was sent on a sea voyage. While en route to New York on the "Packet Boat" a very sympathetic lay passenger gently informed him that he had consumption and would die in less than a year. Nevertheless, he recovered and later indulged in active exercises and horse-back riding to overcome the sunken side and the dropped shoulder.

His long siege of ill health moved him on to the study of medicine. In 1842 he entered the office of Dr. Edson Carr of Canadaigua, New York. His preceptor had a countrywide reputation for skillful and successful surgery. Gunn assisted at many difficult operations during the time he was with Dr. Carr, yet it was not until October, 1844, that he entered the medical school. At the Medical Institution of Geneva, New York,

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was a former student of Dr. Carr's and a demonstrator of Anatomy, Corydon L. Ford. At the suggestion of his preceptor, Gunn entered this school and became the roommate of Ford. After two courses of seven months each and the intervening time spent with Dr. Carr, Gunn was graduated from this school, which later became the Geneva Medical College in 1831 and was finally closed in 1872 but probably became the Medical Department of Syracuse University. While in the medical school, Ford took more than usual interest in Gunn who took an unusual interest in practical anatomy. During this time they laid plans for their brilliant future. Their well made plans as professors in surgery and anatomy were adhered to very closely.

The enterprise and enthusiasm of Gunn were enormous. On the sixth day after his graduation he was westward bound for medical adventure. With him, in a trunk, he carried a huge colored cadaver that Geneva had received from a State prison. He arrived in Ann Arbor on a cold snowy February day in 1846. With his huge cadaver, an innate strong personality, and real ability for organization and constructive work, he organized a private course in anatomy both didactic and practical two weeks after his arrival. In addition, he entered the practice of medicine and surgery in the front rooms of the house in which he taught anatomy. One of the early pupils in this discrete back-room laboratory was Edmund Andrews, later a leading surgeon in Chicago. At this early stage in his career Gunn readily demonstrated his ability as a fine teacher, a combination of unusual lecturer with profound knowledge of his subject. He gave the first organized course in anatomy in Ann Arbor and probably in Michigan.

Here in Ann Arbor, after he had been there about one year, Gunn gave aid to Sager and Douglas in their efforts to establish a medical school. These men were successful and in July, 1849, Gunn was appointed professor of anatomy and surgery. The medical school did not start regular sessions until October, 1850. In the interval between his professorial appointment and the opening of school, he made an inspection tour of the medical schools and hospitals of New York, Boston and Philadelphia. His first class at the medical school in 1850 numbered 92, and each year gradually enlarged until his last class in 1866 totaled 525.

He was exceedingly busy during these early years, engaged in private practice, taught anatomy and surgery, followed classical readings, and became proficient in the German language. The task of obtaining and developing clinical facilities fell upon Dr. Gunn, as the University of Michigan Medical School was from its very beginning a scientific, and not a practical or clinical school. For twenty-five years the school had no hospital or anything like it for clinical facilities. Gunn originated the idea of having outlying practitioners bring their patients to the clinics for consultation so that the students obtained full advantage of each situation as it presented itself.

In 1848 he married Jane Augusta Terry, the only daughter of Dr. M. Terry, who was a physician. They removed their household to Detroit in 1853. In the same year he gave up the chair in anatomy and obtained the appointment of his old friend and teacher, Corydon Ford. Gunn engaged in general practice in Detroit. He journeyed to Ann Arbor twice a week for surgical lectures during the seven month school year. He worked as co-editor of the *Medical Independent*, a Detroit monthly medical journal in 1857. The later years in Detroit he limited his practice to surgery.

On the first of September in 1861, he joined the Army of the Potomac as surgeon to the Michigan Fifth. He took his army work very seriously and worked day and night aiding the many sick and wounded. He was at the battle of Williamsburg, took part in the Peninsular campaign, and was an ardent supporter of General McClellan, "Little Mac." Ill health and continual distress because of dissatisfaction with his superiors in the medical corps forced him to resign as a regimental surgeon. He returned to Detroit in July, 1862, a very thin and debilitated man. After he regained his health he continued his teachings at Ann Arbor until 1867. During this latter period in Detroit, tragedy of the starkest type entered the family life. His sixteen-year-old son, the oldest of his four children, who had shown a natural leaning to surgery during the Civil War, perished in the Detroit River while on a fishing trip with a friend.

In the spring of 1867 he was invited by the

faculty and trustees of Rush Medical College to accept the chair in surgery left vacant by the death of the brilliant Dr. Daniel Brainard. Gunn resigned his chair at Ann Arbor, after sixteen years of herculean endeavor to build up a surgical clinic, and moved his family to Chicago. At his inauguration at the opening of the new buildings on the north side, great interest was shown by the large audience present. He began work immediately and for twenty years, until his death, gave a brilliant service to the institution.

In 1871 the new college was destroyed in the Chicago fire, and along with it Dr. Gunn's office which was in the building. He lost two exceedingly valuable possessions which could not be replaced. One was a cabinet of mounted anatomical specimens that were collected over a period of many years, and the other was the manuscript of a work of surgery nearly ready for the publisher. He had numerous other difficulties. His library was destroyed and much of his surgical practice was lost or scattered. Fortunately his house remained and here he established his office. He continued to practice only surgery, but for a time after the calamity considered the return to general practice.

In the winter of 1879 he was dangerously ill from an arm infection and pyemia. Few of his fellow practitioners thought he would recover. To recuperate, he went to Europe with doctor friends. He visited the continent again in 1881, his wife accompanying him.

During the last twenty years of Gunn's life, Rush Medical College flourished and its fame as an institution of medical education spread widely. This was due, in a large measure, to his business energy, professional skill, and personal popularity as a teacher. He became attending surgeon to Cook County and St. Luke's Hospitals; and in later years to Presbyterian and St. Joseph's Hospitals. He was consulting surgeon to St. Luke's Hospital when the first printed staff list appeared in 1869.

The personal appearance of Gunn was very striking, and one that would attract attention anywhere. He was over six feet tall, well proportioned muscularly. In his early years he had a blond goatee, which contrasted well with his deep blue eyes. Later he had a reddish beard which became gray and then snowy white and was always worn a la Burnside. His hair was very long and hung in large ringlets, made each morning around the moist fingers of his adoring wife. He wore a Prince Albert coat, a high hat, usually a white vest, and striped trousers. From his neck a long, slender, gold watch chain hung majestically. His appearance seemed fantastic and this gave him a reputation for foppishness that he hardly deserved.

He had most of the finest traits a man could have. He never boasted and was not vain. He was a real optimist. He used words with exactness and absolute clearness. To his fellow practitioners he was always fair, true to his profession and too full of the business of life to indulge in jealousy of others. He had one outstanding virtue which his patients, his colleagues, and his students commented most upon, and which they fully appreciated. In all appointments he was very punctual. He was on time to consultations and classes alike. As an illustration of this excellent habit, along with his energy and decision, the following story has been oft told and re-told: "There was to be a faculty meeting in the evening. In the morning Dr. Gunn was called to a case of strangulated hernia thirty-two miles away. Of course his attendance was given up; but promptly at the hour he was present for business. He had driven in his sulky over Michigan roads to the patient's residence, but the attending physician had not arrived; the case was urgent, and, assisted only by the patient's wife, he operated successfully, dressed the wound, consigned the patient to the tardy doctor he met at the door, and in eleven hours from the morning's start was quietly asking for the business of the evening."

During the forty years in practice, he established himself as an authority on surgery, both as a very intelligent and skillful operator and teacher. He studied all of his cases carefully; had a very accurate knowledge of anatomy, and always appeared to be in a hurry but no surgery was poorly done. In the surgical clinic he had few unexpected accidents, and he took every operation seriously so that no fancy gestures, unnecessary talk or actions were allowed. Charles B. Johnson spoke of him as the most skillful operator that ever picked up a knife, and added that sometimes in the hurry of an operation he would place an instrument in his teeth and hold it there till needed a moment later. However,

with the advent of aseptic surgery he accepted and practiced this with great faith and good results.

He made many minor contributions to surgery, and one major work that was outstanding. This was his work on dislocations of the shoulder and hip joints, but worked out the general principles for all dislocations. Previous to the discovery of anesthesia, the general opinion prevailed that the important factor preventing the reduction of a dislocation was muscular contraction holding the misplaced bone firmly in position. Even after the introduction of anesthesia, dislocations could not be reduced with ease. To the surgeon, dislocations of the shoulders and hip caused great despair, due to the tremendous force necessary and the many failures of replacement. Gunn removed the muscles of cadavers which left the bones and joints free, and then produced similar dislocations. He studied his experiments carefully, and determined the factor that caused such difficulty was the untorn portions of the capsular ligament which would become tense as the dislocation occurred. He showed, by logic and actual demonstration, that by putting the bone in the exact position that it had been at the moment of dislocation and then exercising moderate reverse force the bone passed into the normal position. He announced this work early in his career in 1853 before the Detroit Medical Society. His work preceded that of Henry Bigelow's by fourteen years, but was published in a local western medical journal. He enlarged on his work in 1859, and again returned to the subject in 1884 when he published an excellent article on dislocations in the *Chicago Medical Journal and Examiner.*

He enjoyed two hobbies very much. One was horse-back riding and the other was amateur astronomy. He rode as much as possible, and was a very striking figure on horseback because he dressed fastidiously and had the handsomest mount obtainable.

In February, 1887, he toured California and appeared in the best of health. He visited many of the cities but enjoyed Santa Barbara the most. During the summer of that year his health gradually declined and he died in Chicago on November 4, 1887. At the time of his death, Gunn was a past president of the American Surgical Association, an original member of the American Association of Genito-Urinary Surgeons, a member of the Congress of American Physicians and Surgeons, and also of the local and national medical societies.

After his death, his wife collected his memoirs and published them in book form in 1889. A very fitting closing to such a noteworthy career was stated by his wife in the memoirs:

"Those who had known him long and intimately could not know all his inner life. He thanked God for mere existence. He never outlived the romance of his love, and perhaps it is not too much to add, that over a period of almost forty years, in letters to his wife were passages worth living—and dying for."

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PSYCHIATRY AND THE GENERAL PRACTITIONER

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I cannot at this time think of any branch of medicine the early recognition of which means more to the patient than psychiatry and there is no branch of medicine that is less understood by the general practitioner. There are several reasons for this:

First, up until a few years ago the treatment of mental diseases was not taught in the medical schools as a separate branch, but as a division of the general subject of medicine and attendance was not compulsory. This is the way it is still being taught in a great many schools. Of the 79 medical schools in the United States, the subject

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is taught more or less in 60 of them, leaving 19 in which it is not taught at all. This state of affairs hardly prepares a physician to intelligently give advice relative to the handling of such cases should he come across them in his practice, which he is sure to do for it is the general practitioner who first sees these cases and not the specialist.

Second, many physicians are not interested in psychiatry; it does not appeal to them and they really do not care whether they treat such cases or not. With others, mental cases irritate them and they do not have the patience to attend them. It is quite true one seldom gets any cooperation from a mental case. They cannot or will not tell you about themselves. They talk either too much or not at all; are headstrong, wilful and bent on having their own way; refuse medicine and often food and not infrequently attack attendants or doctors; so one cannot really blame any physician for not wanting to attend them, but they are human beings who need medical attention and it is up to us as medical men to give them the best attention possible. If we would stop long enough to realize the fact that all the undesirable symptoms in a mental case are due to pathological conditions and that the patient is a sick man just the same as though he was suffering from typhoid fever or pneumonia the case would appeal to us in a different light and our interests be aroused.

It is not necessary that a physician be a mental expert in order to give intelligent advice relative to a mental case. He does not have to distinguish borderline cases or even be able to tell the difference between dementia praecox and manic depressive psychosis. What he wants to be able to do is to give reliable advice as to whether the case in question should be treated at home or committed to an institution and also to be able to care for the patient at home should the family so desire.

The commitment to a state institution is a serious matter and should receive a great deal of thought. All committed patients lose their citizenship; they cannot vote or transact legal business, or even sign checks and this state of affairs may last indefinitely even after the patient leaves the hospital unless discharged as cured. If discharged as improved they have no legal rights as far as signing papers is concerned or looking after their own property. A great many business concerns will not take back a former employee who has received treatment at a mental hospital unless discharged as recovered. But this is not all, a person who has ever been a resident in a state hospital is more or less a marked person; people watch and talk about him when he returns home and frequently he is returned to the institution on the old hearing, without trial, on the complaint of someone who may not be as mentally fit as he is.

When sending a patient to a private institution we find things entirely different. He does not lose his citizenship, he can vote and sign papers and checks and although he may be as crazy as a "March hare" his signature will be accepted in any court. Private sanitariums, however, are expensive, even the cheaper ones charging around $40.00 a week are far beyond the means of a great many people, while those charging more are only for the rich. It is my opinion that no one should be sent to a private sanitarium unless there are sufficient funds to keep him there indefinitely if necessary. When there are only a few hundred dollars in the family bank account, the patient and family are both continually worrying on account of the expense, which interferes with recovery and as the account dwindles and the patient does not improve satisfactorily, the institution is often blamed, especially if the family physician has said the case only needed a few months treatment. It is a mistake for any physician to place a limit on the time a psychosis will last, for nothing is more uncertain. All prognosis should be guarded for there is always a possibility of the most promising cases becoming chronic.

A physician who is called in to see a mental case has several things to consider. Is the condition such as to allow the patient to be cared for at home? Is he homicidal, suicidal or liable to become so? Is he depressed or noisy? Has he a tendency to wander away from home? Is he destructive to clothing or furniture? Combative? Impulsive or very untidy? Any of these symptoms being present would cause one to recomment institutional treatment. If it is decided to send the patient to a private sanitarium the physician should take a personal interest in the matter and see to it that the place selected is one where an earnest effort is made to give the

patient as much diversion and entertainment as possible. I say this because *some* private institutions keep their patients in bed, especially the troublesome ones, the greater part of the time. This mode of treatment may be all right for certain nervous conditions, but the majority of mental cases need diversion. They should be kept busy doing something, if only playing ball or taking walks into the country. If this can be done the patient's condition both mentally and physically will be greatly benefited.

Depression is a frequent symptom of mental disorders and wherever present the patient should be considered as a potential suicide and the necessary precautions taken. This is hard to do sometimes because the relatives cannot be made to realize the truth of this statement (where the relatives will not take the proper precaution against suicide). The physician should refuse to treat the case at home and recommend institutional treatment. I don't know why, but it is true that there are a great many more suicides in private institutions than state hospitals. I believe suicide is often suggested to a patient by taking away certain articles with which they might injure themselves, such as suspenders, belts, bath robe cords, razors, etc. In fact I have had patients tell me nothing was further from their minds than self-destruction, until they noticed certain things had been taken out of the room. This got them thinking just why this was done and the thought occurred that perhaps it was because it was feared they might injure themselves, but after the thought of suicide had occurred to them they could not get rid of it.

A mental case always does better among strangers. Relatives never fully realize the true state of affairs, they are too sympathetic, too obliging, scoff at the idea of suicide and the patient resents having to take orders from them. If, however, after due study of the case it is decided to treat it at home, insist upon having at least one paid attendant or nurse and two are better. The nurse or attendant should be an intelligent person and the more intelligent, the better result you are going to obtain.

It takes a tactful person to get along with a mental case and one who has a great deal of patience. The patient must be entertained one way or the other. If we can find something he is interested in, so much the better, but keep him busy. This is where a tactful nurse will succeed where one less tactful will fail. The nurse should never allow the patient to dictate even to the slightest degree. He or she must be master of the situation and by assuming this attitude from the very first a great deal of trouble will be avoided.

Another piece of good advice is; don't try to argue your patient out of his delusions for it cannot be done. The ideas are just as real to them as ours are to us and arguing only antagonizes them and really does harm. This is especially true where the ideas are of a paranoid nature. The patient at once considers you as being in league with his enemies, may even imagine you are a spy for them. When this occurs he will become suspicious and watchful and all cooperation as far as he is concerned ceases.

If for any reason it is thought best to keep the patient in bed for a short time, which may be necessary where there is a poor physical condition to deal with, he should be entertained at least a part of the time and not left entirely to his own thoughts. Such a patient can be read to from interesting books. The topics of the day can be discussed, cards and different games can be played and even basket making. It will frequently be found the patient is so absorbed in his own thoughts that it is only after considerable urging he can be made to do the simplest thing and then only for a short time, but with patience and perseverance one can accomplish a great deal. What one wants is to try to create an interest in something and when this is done the hardest part of our road has been traveled.

Of the manic depressive group, melancholia is the only one that can be managed outside of an institution and this only when the melancholia is relatively mild in degree, but if the patient be delusional and hallucinating the case is usually one for commitment even if the amount of depression is not great. Cases of melancholia are especially adapted to rest methods, quite commonly rest in bed, full feeding and gentle bathing and massage can be instituted without much difficulty. However, this is not always the case with massage, or other mechanical procedure. The patients are apt to become disturbed and made nervous by the handling and manipulating, but occasionally a tactful and

gentle nurse succeeds in getting the patient used to it.

Where the patient suffers from a loss of appetite, or refuses to eat on account of his delusions, he may occasionally be persuaded to take sufficient food, but frequently tube feeding has to be resorted to, and the most satisfactory way to feed a patient is through the nose. A medium size rubber catheter with a small funnel attached to one end is all that is needed, through this can be poured egg nog, milk, lemon or orange albumin, thin soup, etc. The length of time to wait before starting tube feeding depends upon the physical condition of the patient. If he is strong and robust we can wait two or three days, or maybe longer, but if the physical condition is poor, feeding should be commenced as soon as he or she refuses to take sufficient nourishment. At first only a small amount of nourishment is given, but as the patient gets used to being fed in this way the amount is increased until a quart or even more can be given twice a day. The feeding tube is an excellent way to give cathartics and sedatives to patients who refuse medicine and who are noisy and disturbed. The medicine can be given along with the regular feeding, or, in fact, any time it may be desired. The patient may be seated in a chair or lie on a bed. The nurse should hold the patient's head in one position and in the case of resistive patients one or even two attendants may be necessary to hold the patient and prevent him from pulling the tube from his nose. The nasal tube should be greased with vaseline and gently introduced in a direction parallel to the floor of the nose. Frequently it will be found that for some reason or other, such as a deflected septum, the tube cannot be passed, in which case it must be withdrawn and the other side tried. During the passage of the tube, the patient may experience the feeling of suffocation but if he is told to breathe through the mouth this feeling will be relieved. The tube should be gently pushed backward and will glide along the posterior wall of the pharynx into the esophagus and thence into the stomach. While passing the tube it is wise to gently depress the chin, as by this expedient the tube is much less likely to enter the larynx. If it should, the patient will at once start strangling and show other signs of distress.

Of the praecox group, only the simple type should be treated at home and even here one seldom meets with much success. These patients (the simple type), are indifferent, lazy, careless of personal appearance and often given to tantrums of temper. They do not take kindly to supervision and often disappear from home for days and weeks, preferring to lead a tramp-like existence. The women are apt to be immoral and neither the men or women have the sticktoitiveness to hold a position for any length of time. They seek the path of least resistance and do not mind in the least being supported by relatives or friends. They are not, however, homicidal or suicidal and are seldom destructive of clothing or furniture.

Hebephrenic type of the praecox group cannot be cared for outside of an institution. They are destructive, irritable and given to acts of violence. They frequently deteriorate early and become quite untidy in their personal habits and appearance. They hallucinate and may entertain ideas of a persecutory nature.

The paranoid and catatonic types of praecox group cannot be cared for outside of an institution. They are destructive, irritable and given to acts of violence. They frequently deteriorate early and become quite untidy in their personal habits and appearance. They hallucinate and may entertain ideas of a persecutory nature.

There are a great many epileptics who never see the inside of an institution, what we call epilepsy without psychosis. There are others however, who fall under the term, epilepsy with psychosis. These should never live anywhere but in an institution, for their own good as well as the community at large. Epileptics occasionally become depressed, especially if they come to realize the seriousness of their condition, which happily for them they seldom do. When they become depressed, however, they are quite suicidal and not a few have committed suicide. The majority of epileptics are cross, irritable, headstrong, domineering and hard to get along. They are usually quite religious in a superficial way. These different conditions are more prominent just before or after a seizure. Whenever an epileptic furor takes the place of a seizure, which not infrequently happens, the patient becomes a veritable mad man and will murder without the least hesitation.

I expect more mistakes have been made in the

diagnosis of general paralysis of the insane than any other mental condition. This can readily be understood when one considers the nature of the disease. Few, if any, paretics consult a physician voluntarily, they have a feeling of well being, of fitness for things which cause them to scoff at the idea of being sick. They only consult a physician to please relatives or friends. Frequently the physician is asked to call at the home, the patient not being aware of the intended visit until he arrives. Naturally under this condition he is non-communicative, laughs at the idea of needing medical care and may conduct himself in a perfectly normal manner.

In the study of mental conditions it must be remembered that frequently, especially in the early stages, the patient is perfectly able to and does conduct himself properly in the presence of strangers, only showing abnormal conduct and behavior reactions in the presence of his own family, which may put some doubt as to his insanity in the mind of the examiners, but in the case of paresis there are unmistakable neurological findings, which stamp the disease at its true value. I refer to the Argyll-Robertson pupil, speech defect, pathological reflexes, tremors, etc. Paretics are dangerous patients to try to care for at home on account of their impulsive actions, lack of cooperation and general untidiness; owing also to the fact that the great majority of them do not feel sick, they refuse to remain away from office or store and get into all sorts of trouble on account of poor judgment and frequently squander large sums of money or enter into impossible contracts. They are irritable, quarrelsome, and suspicious, frequently accusing their wives of infidelity and when aroused are really dangerous. A great many early paretics are cared for by their family physician for a considerable time and it is only after marked mental symptoms appear that an institution is thought of and no physician should hesitate to recommend hospitalization when he finds the case is not improving, which can be determined by frequent examination of the blood and spinal fluid. He should also bear in mind that these patients are suspicious and very impulsive, often commit acts of violence without a moment's notice, so he should be prepared for any emergency. General hospitals will not take a mental case if they know it, unless they have a psychopathic ward, which few of them have, so when a patient suddenly becomes very violent, there is nothing left to do but take him to jail until arrangements can be made to send him elsewhere. This is certainly a very unfortunate state of affairs and need not always occur if the physician has kept in mind that such a thing might occur and is prepared to meet it. As far as the treatment of these cases (paresis) go it is well not to depend on any one remedy, but to try them all until one is found which seems to suit the case better than the others. It is not my intention to go into the treatment of paresis. We all know the remedies used, they can all be administered in the office. Just at the present time the best results are being obtained from the malaria treatment combined with tryparsamide and mercury.

We often blame people for sending their old parents, either father or mother, to a state institution and there is no doubt that quite frequently the state is imposed upon, but very often this is not the case. A person suffering from senile dementia or arteriosclerosis can be cared for at home under favorable conditions but these conditions do not exist in every home. Where the mental disturbance is a mild one, all that is needed is some one to be with the patient all the time and possibly a little bromide at bed time to insure sleep and counteract the tendency to wander around at night, which this class of patients so frequently do. These patients are quite childish and need a great deal of attention. They want to be entertained and if they can be kept busy doing something, no matter what, they will be kept out of mischief and will rest better at night. If all cases were so easily managed everything would be simple enough but unfortunately this is not the case. Frequently the patient does not recognize relatives or friends and although in his own home, begs continually to be allowed to go home and will get out of the house at every opportunity day or night, wandering around in an aimless sort of manner and frequently getting lost. When prevented from having their own way they become quite angry and do not hesitate to fight. Periods of excitement occur quite frequently in the aged, especially the arteriosclerotic, during which they are combative, destructive and even homicidal. It is impossible to keep these people at home. Even in institutions they cause considerable trouble.

There are a number of people in the world who, although given every opportunity never make good. They are continually getting into trouble, are egotistical, self-satisfied, care nothing for the feelings of others, may or may not be alcoholic, but always blame others for their lack of success. These are the psychopathic personalities. They seldom see the inside of an institution, because they put up such a good appearance few judges or juries will adjudge them insane, but occasionally some long suffering relative will get tired of paying the bills or of making good checks forged by one of these individuals and succeed in having him committed. In such cases, however, the benefit from commitment is nil as far as the patient is concerned, but it is a big relief to the relatives of such an individual to know he is where it will not be possible for him to get into any more trouble.

Mental defectives either with or without psychosis frequently become disturbed, noisy and destructive, in which case a physician may be called in to administer a sedative. In such cases a history of the case will usually give one a pretty good insight as to just where the trouble is. Where there is no psychosis present the condition will clear up in a few days, but where there is a psychosis the case is one for commitment.

If our quiet patient who is being cared for at home, suddenly becomes violent or very noisy, or if we are called upon to see a case that is very much disturbed, it is quite necessary that we do something at once to prevent the patient from exhausting himself or from injuring others. If the excitement is of the milder type he may be persuaded to take 15 or 20 grains of trional, 10 grains of veronal, or a mixture of veronal 10 grains and sulphonal grains 15. Luminal in small doses 1½ to 3 grains often proves very efficacious. If the excitement is very great and the struggles of the patient severe, hypodermic medication should be resorted to and the best for this is morphine ¼, hyoscin 1/100 or morphine ¼, apomorphine 1/40; this will bring results in from 10 to 15 minutes and the patient will sleep two or more hours. Of course, if this has to be repeated several times, it gradually loses its power and a larger dose must be prescribed. Sodium luminal can be given hypodermically and seems to be entirely free from objections. It is very soluble and the administration of 3 grs. is usually followed in from 15 to 20 minutes with marked sedative reaction without any appreciable influence on pulse or respiration.

In considering remedies that are of value in bringing about rapid sedation we should not forget paraldehyde. This is a remedy which causes sleep almost immediately, certainly within 15 to 20 minutes and this too without producing the slightest cardiac or respiratory depression. Its disgusting odor and offensive taste are its chief objections and yet many patients, especially male patients suffering from alcoholic excitement, can be induced to take it if mixed with a little whiskey or milk. In cases of great excitement 2 drams may be administered with prompt effect but the sleep produced only lasts two to three hours. Paraldehyde, however, may prove to be a valuable help when scopolamin and morphine have been given in small doses and acting slowly have been ineffectual in producing sleep. Or when trional has been given and is ineffectual in producing sleep. Under such circumstances paraldehyde hastens the sleep while the other remedies already given, prolong it. For extreme excitement we have had considerable success with sodium amytol injected into the muscles of the thigh or intravenously in doses of 7½ to 15 grains. In the choice of hypnotics and method of administration, we must be guided entirely by general principles. If used at all they must be used promptly and in efficient dose.

CONCLUSION

No physician, either general practitioner or specialist, should ever put a limit on the time a psychosis will run, for nothing is more uncertain. Sometimes in order to get a patient's consent to go to a hospital or sanitarium he is told he will only have to remain there a few weeks or just long enough for an examination; after admission he soon finds that he has been deceived and at once becomes resentful and suspicious; he assumes an antagonistic attitude and his mental condition is aggravated. Never deceive a patient for he is sure sooner or later to find it out and will never trust you again. Never deceive a mental patient; they are naturally suspicious and deception can only do harm.

A great many mental conditions can be satisfactorily cared for at home under suitable

supervision, but in the majority of cases it is to the benefit of both the patient and his relatives that he receive hospital treatment and as soon after the psychosis is recognized as possible.

Remember a mental patient is a sick patient and needs medical attention and we as physicians *should give that attention to the best of our* ability. If we can train ourselves to look upon the untidiness of these patients, their lack of cooperation, combativeness, irritability, delusions, hallucinations, impulsive acts, etc., as symptoms of a disease the same as we consider the symptoms of typhoid fever or pneumonia, our *interest in psychiatry will be aroused and the* patient as well as ourselves materially benefited.

HEMORRHAGIC INFARCTION OF THE GREATER OMENTUM

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Hemorrhagic infarction commonly follows closure of branches of the portal vein, especially when there is an associated disturbance of the general circulation. The clinical manifestations *of such an infarction are referred to the part in*volved. The superior mesenteric vein is more commonly involved than the inferior mesenteric, and, therefore the typical clinical picture is similar to that produced by occlusion of the mesenteric arteries, viz: sudden, intense, colicky, not localized abdominal pain, tender and tympanitic abdomen, vomiting, obstipation or bloody diarrhea, and rapid collapse. The symptoms in more chronic types of superior mesenteric vein thromboses may be less intense or even absent.

A case of portal vein thrombosis is reported because the clinical manifestations were unusual due to extensive infarctions in the greater omentum. A study of recent literature and review of the subject of portal thrombosis reveals no reference to a case with similar clinical features and pathological findings.

Case Report: A. S., a white man 54 years old, was admitted to St. Joseph Hospital September 10, 1932, complaining of abdominal pain and anorexia. He was in good health until two weeks before admission when he suddenly developed diffuse epigastric pain and nausea which subsided in an hour. The following evening pain recurred and there was some vomiting. He continued to work on his farm for four days before the severity of pain and weakness compelled him to go to bed. At the time of admission there was constant pain in the left upper abdominal quadrant. Neither food intake nor defecation influenced the severity of the pain.

Examination revealed a well nourished middle aged man with a temperature of 100.2 degrees, pulse 84, respiration rate 24, blood pressure 132 systolic and 82 diastolic. There were no significant findings of the head, neck, chest or extremities. A large tender mass was easily palpated in the left side of the abdomen. It extended from the crest of the ilium to the coastal margin and anteriorly to the umbilicus. Rectal examination was negative.

The blood examination revealed negative Kahn, 10,400 leukocytes, 85% polymorphonuclears, 85% hemoglobin, 4,200,000 erythrocytes. The urine was negative. Feces contained no blood. Fluoroscopic examination of the colon after a barium enema revealed scattered diverticula.

A presumptive clinical diagnosis of peritoneal abscess secondary to diverticulitis prompted an exploratory laparotomy, which was performed by Dr. David Fitzgerald, through a left rectus incision. A greatly thickened omentum was immediately encountered. The lower end was free but the edge was very rigid and rounded. Along the edge and scattered over the anterior surface were sharply circumscribed purple patches separated by reddish yellow fatty tissue. A careful and thorough exploration of the peritoneal cavity revealed smooth shiny peritoneum everywhere and no evidence of pathology in the viscera.

A portion of the omentum removed for microscopic study revealed thrombi in practically all veins. Early organization had taken place in many of the vessels. There were extensive necrotic areas, adjacent to the blood vessels, infiltrated with erythrocytes and polymorphonuclear leukocytes.

After the operation there was a gradual increase in fever, vomiting became more persistent, abdominal distention developed and death occurred nine days after operation.

A necropsy was performed two hours after death. Upon opening the peritoneal cavity at the site of the laparotomy an abscess was encountered between the small intestines and the abdominal wall. A generalized fibrino-purulent peritonitis was also present. The small intestines were markedly distended, the colon was collapsed. The common mesentery was very thick (4 cm)., fatty, and edematous. The veins of the mesentery were occluded by purple thrombi. The lesser omental sac was free. There were no changes of the stomach, appendix or gall bladder. There was a small area of hemorrhagic infarction involving the fatty tissue around the right kidney. The spleen was small and soft. It weighed 170 gm. The splenic vein was occluded by a soft purple thrombus. The liver was small, weighing about 1100 gm. The portal vein, its intrahepatic radicles, the superior mesenteric vein and its branches, and the splenic vein were also occluded. There were no ulcerations or infarcted areas in the intestines or spleen. Other findings were fibrous perihepatitis and perisplenitis, parenchymatous changes of the myocardium and kidneys, slight arteriosclerotic changes of the

aorta, and healed tuberculosis of the apices of both lungs.

Microscopic examination of the liver revealed brown atrophy, fatty infiltration, and thrombotic occlusion of the smaller portal radicles with beginning organization.

Summary: Hemorrhagic infarction of the omentum, secondary to portal vein thrombosis produced an unusual and obscure clinical picture which resembled an abdominal tumor or abscess.

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SEXUAL NEUROSIS IN MEN: ETIOLOGY AND HYGIENE

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The majority of men with functional disorders of sex are neurasthenics, who, in addition to the symptoms of general neurasthenia, present some definite sexual syndrome. Our present concept of the origin of the disease entity of sexual neurasthenia is still not definitely established. A purely psychogenic origin of sexual neurasthenia has been advanced by some modern psychiatrists, who regard it in the same light as neurasthenia in general; namely, as a functional nervous disorder, not dependent on organic disease of any kind, constituting one of the disease groups of the so-called fatigue neuroses. Krafft-Ebing, in his celebrated book, Psychopathia-Sexualis, considers it a true psychoneurosis, one independent of any visceral disease and an outgrowth of inherent neuropathy. As it is now generally known, Freud and his disciples regard all the neuroses as sexual neuroses. They find that the most important etiologic factor in the development of neuroses is some disturbance of the individual's psycho-sexual sphere. With a normal sexual life, they say, a neurosis is impossible. They believe, therefore, that sexual neurasthenia is an actual neurosis, which is invariably a sequel of some disturbance in the sufferer's sexual life.

Other advanced thinkers, however, believe that no strict line of demarcation can be made between organic and functional aspects of this disease; that every purely functional disease has an organic basis, the latter at times being too faint to be recognized by the microscope or by chemical reaction. The majority of modern urologists, fortified by new diagnostic armamentaria, maintain that a purely psychogenic origin in sexual neurasthenia is rare; that there is almost always some functional derangement in the sexual apparatus, behind which lies a variable degree of organic changes. "There can be little doubt," says McDonagh[1], "that there is a lesion somewhere which we are not advanced enough to detect, but the fact that it is hidden does not warrant us to assume that there is nothing wrong." Wolbarst[2], in a recent urethrocystoscopic study of 300 cases of impotence in men, reports that forty-four per cent of his patients gave a history of gonorrheal infections, usually involving the adnexa, and eighty-three per cent had some demonstrable pathologic lesions in the urogenital tract. Some of the lesions recorded were an involvement of verumontanum, such as simple congestion, erosions, granulations, polypi, excrescences, hypertrophy, swelling, distortions, etc.; erosions and trabeculations of urethral floor posterior to the veru; an involvement of the vesical neck, trigone, etc. Without exception, in all these cases, regardless of the history of previous gonorrheal infection there was some chronic vesiculitis with a low grade of chronic prostatitis present.

At times it may appear incredible, that a slight, scarcely perceptible lesion or hyperemia in the deep urethra is capable of producing so great an irritation as to bring forth all the mental and somatic disturbances often presented by sexual neurasthenics. But, as Huhner[3] aptly remarks, some insignificant lesion detected through the examining cystoscope may be the very cause of most profound reflex symptoms of sexual neurosis. I recently treated two cases of chronic refractory headaches which had resisted all forms of local and general therapy, that yielded to the treatment of existing genital lesion—in one case a small papilloma of veru montanum and in the other, slight granulations at the base of the colliculus seminalis. "As a result of these apparently insignificant pathologic lesions," says Huhner, "the cerebrospinal sexual center is being continuously bombarded with impulses from these parts, with the resultant irritability and complete exhaustion of the center." Beard,[4] a pioneer neurologist, claims that "next to the stomach, the prostatic urethra is the most im-

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portant center of reflex irritation of the body. There is every reason physiologically and anatomically why this should be so, and a close study of symptoms of nervous debility proves it to be so. A morbid state of prostate is both an effect and cause of nervous exhaustion, for it is impossible to have an irritable prostate and yet be in good health in other respects."

Generally speaking, however, pathologic findings do not necessarily imply clinical phenomena and, therefore, organic criteria may exist without causing any symptoms of sexual inadequacy. We know that there is a neurasthenic type of an individual who, with some slight pathologic findings, is quite different from the average patient with the same disease. His emotional disturbances are so out of proportion to his physical disorder that his neurasthenic condition should be dealt with on its own account. If we narrow our vision to the physical side only, and disregard the intellectual and emotional sides of our patients, we shall fail. Therefore, in the treatment of sexual neurasthenia, whether its origin is in a psychogenic disturbance, urogenital pathology or endocrine dysfunction, we must deal with the entire man, the entire complex of his mental and physical equipment, not merely with his sex organs.

In my experience, the hygiene of sexual neurosis should be primarily psychic and, secondarily, somatic. I purposely assign the first place to mental hygiene, because mental states of these patients, without exception, are predominantly affected. Physicians who are dealing with male aberrations of sex are usually aware of pronounced depression and deep suffering on the part of these patients, in the melancholy contemplation of their deprivation and inability to participate in the normal *joie de vivre*. There are many patients, thus afflicted, who refuse or are unable to think of anything but their sexual disabilities. This obsession, at times assuming a monomania, not infrequently leads to a state of anxiety neurosis or even to the tragic denouement of suicide. Generally, the patients with neurotic diathesis tend to develop inferiority complexes, which they invariably project to the sexual sphere. This feeling of inferiority may arise, conversely, from a single ineffectual attempt to perform the sex act or from a series of oft-repeated sexual frustrations.

"Persons of introspective natures," says Hugh Young,[5] "may become impotent, the trouble dating from a single instance of failure, due usually to 1. premature ejaculation following exceptional sexual excitement, 2. failure of erection following too prolonged excitement and, 3. failure of erection or ejaculation, or both, following alcoholic intoxication, fatigue, worry or preoccupation." This may lead to the fixation of the inferiority complex which often is associated in such cases with a development of all sorts of bizarre ideas: for instance, the conviction that their genitalia are too small, too cold, insensible to touch; their semen is too scanty or too thin; that their libido and voluptas are absent; or they indulge in constant worry over the effect of abusus sexualis, ex coitu or ex manu, imaginary or real, or over the results of venereal diseases.

In many instances, I believe, such fear fixations may be readily cured by proper advice, while unskilled medical advice tends to exaggerate this condition, leading at times to dire consequences. Sympathetic and rational attitude on the part of a physician will help to support the psyche of these patients, by reassuring them of a prompt cure and of an ultimate recovery. All too frequently, however, physicians take this problem too lightly, subjecting their patients, altogether to too much careless joking, thereby increasing chagrin and embarrassment of the latter. But we should be cautious not to overdo the matter by dwelling upon the subject and exaggerating its seriousness, thereby increasing the patient's apprehension. To still further alarm them is a mistaken policy often fraught with danger of permanently fixing their sexual neuroses.

It is important for us at all times to be solicitous that the pride of the patient, deeply wounded by previous sexual fiascos, does not suffer any new and added defeats. We should try to do this before the habit of sexual failure has been established. Thus, for instance, dealing with the cases of psychic impotence of the newly wed, or with transitory loss of potentia occurring during the first period of wedded life, as a result of the exhaustion of sexual center from excessive stimulation, we should counsel sexual quiescence and temporary continence. Fortified by our advice, the patient assumes his right to sleep peacefully instead of engaging in repeated and futile attempts

at coitus, done from a sense of conjugal duty. An intelligent wife, as a rule, when appraised authoritatively of the nature of her spouse's disabilities, will prove cooperative and not be unduly alarmed by his failures.

Such brief continence will exclude from the psyche of the patient the brakes that interfere with his proper performance of the sexual act. On the other hand, if the patient, while under the influence of an intense sexual emotion, forgets everything including our injunction and essays a successful coitus, then the success of *le fait accompli* may be ascribed to the retroactive effect of our advice. Hammond[6] has been successful in giving such a patient some harmless pills, with instruction that he may sleep with his wife but under no circumstances to indulge in coitus, until all the pills have been taken. Very often the patient will break the rules, finding himself perfectly *compos copulationis.*

It is obvious that sexual neurasthenics should be guarded against all forms of sexual excitement not leading to coitus (*irritatio frustrana*); likewise, against any unphysiologic attempts and methods of performing the sex act. The injuries that come from the unnatural forms of coitus are functional rather than organic in character, and may be practiced by some individuals for years with an apparent impunity, but in the case of the sensitive, the nervous and the weak, injury of demonstrable character will usually result if the habit is long continued. It may be asserted, therefore, that the more sensitive the nervous organization of the patient, the earlier and the more severely will he suffer.

Manifestly, the neurathenics should avoid sexual excesses, natural or artificial. It would appear that individuals with impaired sexual functions were incapable of engaging in *excessus veneris,* but only too frequently we find a patient suffering, for instance, from premature ejaculations (*ejaculatio praecox*) persistently indulges in repeated sexual acts and, paradoxically, the succeeding attempts often proving more satisfactory.

It is almost axiomatic to assert that sex and its capacities are fundamentally individual and vary widely within normal limits. As Stekel states, as far as sex is concerned, we must emancipate ourselves once for all from the canons of normality; for there is no such a thing as normality in sex. A comprehensive question, therefore, as to when the sexual activity becomes pathogenic for an individual, cannot be answered categorically. "In this," says Freud, "we have to give due weight to the influence of quantitative factors and the co-operation of a number of pathogenic influences and, above all, we have to assign a great rôle to the so-called constitutional disposition of the individual."[7] But, alas, we have no available means of gauging this disposition beforehand. Only a study of the total function of the individual, his mental and physical reactions, his detailed sex habits and experiences, provides us with a reasonably accurate means of determining the extent of his natural limitation. (Wolbarst). Empirically, we may say, that sexual activity is pathogenic for an individual when it is practiced with effort and is followed by fatigue and exhaustion.

As a rule, a neurasthenic endures normal coitus badly. Whereas, in a normal person sexual intercourse induces no disturbance—to the contrary, after it he usually feels, to quote Sturgis, like a *"gallus qui cautat,"*—in the neurasthenic, psychic and physical reactions of varying duration and intensity often supervene. I regard the phrase, "one day neurasthenic," coined by Ferenczi an extremely apt one. My observation has been, that the dominant complaint of sexual neurathenics, namely, of premature ejaculations, which is frequently accompanied by the lamentations of their wives as to the growing frigidity of their consorts, is often due to the lessened libido or dissatisfaction with the coitus and unconscious attempt on the part of the latter, to get through with it as quickly as possible. In other words, they take refuge from unconscious sexual conflict by establishing psychic impotence and frigidity.

This inadequacy of sexual acts almost invariably leads to protean somatic manifestations, such as headaches, spinal irritation, dyspepsia, flatulence, gastralgia, constipation, cardiac symptoms (as the well known "masturbator's heart)", etc. In fact, gastro-intestinal symptoms may dominate the picture of sexual neurosis to such an extent that they often masquerade as an independent disease. Chronically congested genitalia being jointly innervated through the sympathetic system with the lower bowel, frequently gives rise to the spasm of the anal sphincters,

thus producing spastic constipation. Chronic constipation and straining incident to the act of defecation, result in increased hyperemia of the pelvic adnexa, and clinically manifest in frequently occurring spermatorrhea, prostatorrhea, and nocturnal or diurnal emissions.

In mild cases, these involuntary seminal emissions accompany only marked straining efforts or the passage of hard fecal matter, whereas in more severe cases they may occur with every act of defecation or even follow a simple act of urination, sneezing, coughing, etc. Spermatorrhea defecationis, as a rule, is of little pathologic significance, though in psychoneurotic individuals it may engender apprehension of anxiety neurosis, with dominant fear of impending "loss of manhood." In hypochondriacs spermatorrhea becomes a bugaboo which often makes them the dupes of charlatans. It is especially prone to occur in unmarried men, who are sexually continent, sedentary in habits, with oft-repeated ungratified sexual desires or unrelieved erotic fancies; in short, in individuals who are perpetually in a state of erethism or, as Marrow calls it, "mental masturbation." It is among this large group that we find the men who practice that "unchaste continence which revels in the paraphanalia of indecency, lewd books, tales and thoughts, while seeking to hide beneath the cloak of physical propriety" (Keyes). Though clinical observations warn us not to stress harmfulness of spermatorrhea, yet, unquestionably, in cases of neurosis we encounter instances in which it has done harm. In my experience, I find it is impossible to exclude a permanent diminution of sexual potency from the consequences of excessive nocturnal emissions (or masturbation), although Freud says, "in many instances the loss of potency is merely apparent." However, a singular part of spermatorrhea is that regular sexual intercourse, as a rule, affords the best means for its relief; though such patients are at first more or less impotent when an intercourse eventually is attempted. Matrimony may intervene to save the day, but it should not be prescribed like a pill.

The hygiene of sexual neurasthenia should include proper dietary regimen, for, as previously stated, digestive disturbances in the nature of atonic indigestion, spastic constipation, etc., are quite constant. The diet should be nutritious, rich in vitamins, especially the Vitamin E, which, as believed by some recent investigators, acts specifically on fertility and sterility (Evans, Burr, Bishop, Sure et al). When general stimulation is desired, I recommend a diet also rich in sugars, firstly, on account of its high nutritive value; secondly, for its empirically proven aphrodisiac action and, thirdly, for increased feeling of well-being which high caloric diet of sugars generally imparts. Tea, coffee, eggs, mushrooms, oysters, etc., are sexual stimulants and are beneficial, when indicated. We must exclude, however, all indigestible and irritating foods and drinks, especially alcohol. It is well known that in men, alcohol in small doses stimulates the desire without affecting the potentia; indeed, it rather increases it by removing mental inhibitions, thus accentuating their sense of manhood and flattering their "masculinity complex." The old Roman proverb, "sine Cere et Baccho friget Venus," is true within certain limitations, says Sturgis, "but beyond this neither Bacchus nor Ceres can save Venus from being chilled; for the chronic alcoholic is deprived not only of the power of erection, but he loses even the libido"[8]. In the words of Macbeth, "it provokes the desire, but it takes away the performance."

As I have stated, the primary indication of hygiene in sexual neurosis are quiescence, stability and avoidance of all sterile sexual provocations, both physical and psychic. But this may not be enough. It is important at times to introduce into the lives of these patients some new, positive factors, which will transmute their sexual energy into other, non-sexual channels, thus utilizing the surplus of the sex-instinct in substitute activities. Freud has designated this transference as sublimation or transvaluation. He contends that the process of sublimation tends to marked acceleration of all the mental and spiritual faculties and is capable of elevating them to new heights. It is primarily achieved through increased mental efforts of all sorts, by vigorous self-discipline, strengthening of will power, etc. Practically, this state is reached by intensive application to some new or old fields of endeavor, whether it be intellectual, religious, social or civic in character. The greater the force with which it takes hold of an individual, the better are the results. Increased physical activities, especially vigorous outdoor life, the cultiva-

tion of new sports and hobbies, acquisition of new friends, etc.—all this may prove extremely beneficial.

The constitution of some sexual neurasthenics seems to be peculiarly adapted to the "civilized" sublimation of the sexual instinct. However, this deflecting of the sex instinct from its natural aim and towards loftier cultural pursuits may succeed only in some cases, and at that, only temporarily. Experience teaches us that for the majority of men there is a limit beyond which their constitution cannot comply any more with the cultural demands, and any further attempts at sexual repression will usually provoke manifestations of what we designate nervousness or more especially, psychoneurosis. This process, says Freud, cannot be carried on *ad infinitum* any more than the mechanical transformation of heat into energy. The majority of human organisms seem to require a certain amount of direct sexual gratification, and the lack of this gratification, the amount of which varies with every individual, will bring forth manfestations which we must consider as pathologic. The more one is predisposed to neurosis, the less one can endure abstinence.

The sexual impulse is a force, to some extent an incalcuable force, and the struggle of man to direct that force, when he and it are both constantly readjusting to inner and outer changes in the environment, is inevitably attended with difficulties of the kind we have dealt with.

Where definite local disease is present and the sexual symptoms are not disproportionate, local treatment should be at once instituted, according to the existing indications. We usually find in these cases that with the restoration of the patient's physical health, his mental state improves *pari passu*.

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DISCUSSION

Dr. L. L. Veseen: One point that Dr. Beilin brought out is particularly stimulating, namely, that we have had a tendency in the past to instrument these patients too much, to look for a congested verumontanum and to treat it with silver nitrate applications, whereas the congested verumontanum may not be the cause of the condition but the result; rather a symptom than a factor in etiology. I found in a few cases I have had in close cooperation with the psychiatrist that his treatment has benefited the patients a great deal more than topical applications to the verumontanum.

Dr. H. C. Rolnick: I want to congratulate Dr. Beilin on his presentation. He has presented the best discussion of the subject I have ever heard.

I do not agree either with Wolbarst or Huhner that congestion around the verumontanum is necessarily an etiological factor in these types of sexual disorders and various types of impotency. We are still far away from any therapeutic means of handling these conditions because we do not know the physiology of erection nor of ordinary potency. In spermatorrhea I think we have a definite etiological factor. We have some degree of prostatovesiculitis that is definitely known to cause spermatorrhea.

Dr. Thomas F. Finegan: I believe sexual abuses, coitus interruptus and masturbation are more important than the gonococcus in producing this condition. Attention to the vesicle, where there is a large atonic vesicle, by spraying and hot irrigations may help to clear up this condition. It seems to me the history of infection, especially gonorrheal, has been over-emphasized.

Dr. Leon M. Beilin (closing): It was not my intention to make you all psychiatrists instead of urologists. I wanted to emphasize the importance of the psychiatric side of this question. I think the psychic basis of impotency is by far the most important. While Max Huhner admits that in most cases gonorrhea may be the background, I think most writers think infection *per se* is not an important factor. As Dr. Finegan said, coitus interruptus may be a contributing factor. Only a neurotic type of individual reacts unfavorably to all of these sexual malpractices, while a normal individual can carry on these practices without ill effect. The more abnormal the sexual life in a neurotic individual, the more neurotic he becomes. This condition is associated with a neurotic diathesis more frequently than with a pathologic condition of the sexual apparatus.

SOME REMARKS CONCERNING CEPHALOPELVIC DISPROPORTION

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Of the many causes of difficult labor perhaps the most frequent and important is disproportion

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between the size of the fetus and that of the maternal pelvis. To undertake the care of a woman during labor without making the most careful efforts to determine whether and to what degree disproportion may be present is to invite, through acts of omission or commission, the occurrence of any variety of accidents possible of affecting either mother or fetus. Many needless operative procedures, particularly unnecessary Cesarean sections, with their associated effect on maternal and fetal morbidity and mortality, attend the treatment of patients in whom, without examination, disproportion is incorrectly assumed to be present. Contrarywise, efforts to effect delivery through the natural passages in the presence of an unrecognized disproportion may prove impossible without a destructive operation upon the child. Even if possible, the results in terms of injuries to the mother and fetus and in the development of postpartum complications such as hemorrhage and infection are too well known to be further commented upon. Certainty of the absence of disproportion assures us that artificial delivery may be effected from below if we find it necessary or advisable to do so, provided certain other criteria are met. Similarly, recognition of its presence and its approximate degree, combined with the knowledge of possible and probable consequences, permits of proper interpretation of the course of labor and of the formulation of appropriate plans of treatment.

Disproportion may occur at the pelvic inlet or at the pelvic outlet and may be absolute or relative. The only justification for the use of the term *relative* or *borderline* lies in our inability to arrive at an exact evaluation of the fetal factor. Although disproportion is more frequently manifest at the pelvic inlet, yet an unrecognized and absolute disproportion occurring at the outlet is far more serious. This is due to the fact that it does not become manifest until the head has descended to such a depth and labor has been so long in progress that delivery by Cesarean section is not only difficult but extremely dangerous. For these reasons many consider it preferable to terminate such an unfortunate case by delivery following craniotomy. The hazards and difficulties attending an unrecognized, insurmountable disproportion, whether of the inlet or outlet, are increased if in addition we are dealing with a breech rather than a vertex presentation. In such cases the obstruction will not be manifest until the child has been delivered up to the approximate level of the shoulders; replacement is impossible; the child invariably dies; and efforts at subsequent completion of the delivery are compromised by the fact that access to the head is obstructed by the presence of the child's chest at the vaginal entrance.

The diagnosis of disproportion must be based chiefly upon an examination of the actual relationship between the fetus and maternal pelvis as well as upon careful estimates of the size of both these factors considered individually. A history of a previous uneventful labor is of little value since there may be very considerable differences in the size of children born of different pregnancies. A history of previous difficulty may be equally deceptive since it may have been due to some cause other than disproportion.

Among methods employed to study the interrelationship between fetus and pelvis the following may be mentioned: 1. Mueller's procedure which consists of an attempt to determine by rectal or vaginal examination whether the presenting fetal head can be made to enter the pelvis by reason of manual pressure exerted upon it through the abdominal wall; 2. Hofmeier's procedure which is very similar to that just described; and 3. Hillis' procedure which differs only in that downward pressure is made upon the fundus of the uterus, being transmitted to the fetal head through the axis of its body. In this connection it must be stated that the exertion of such an amount of pressure upon the uterine fundus as is required in this procedure is not to be commended. All of these procedures represent an attempt to determine whether the fetal head can be forced into the pelvis by means of pressure exerted from above. They may give negative results merely by reason of the restraining action of the lower uterine segment before cervical dilatation and retraction have begun or by reason of the placenta being situated low in the uterus. None of them make full allowance for the molding which may occur as the result of labor itself. They are applicable only to vertex presentations in relation with the pelvic inlet, and their results should be considered conclusive only if positive.

Comparisons based on independent appraisals of the size of the fetus and that of the pelvis provide an equally satisfactory approach to the study

of disproportion and one possible of utilization in reference to the pelvic outlet as well as inlet regardless of the type of presentation.

Numerous means, mechanical and roentgenometric, have been devised for measuring the fetal head in utero, and while the originators of these schemes are unfailingly enthusiastic, it is impossible to share that enthusiam from a practical standpoint for the simple reason that none of them yields any information relative to the hardness of the fetal cranium or to the degree of mobility along the suture lines. Under the circumstances we are again unable to predict the amount of molding a head of any given size may undergo in an effort to accommodate itself to the maternal pelvis. General estimates of the size of the fetus as a whole, will, therefore, give us equally useful, if not less misleading, information concerning the fetal factor. The Ahlfeld and McDonald measurements have been devised with this end in view. The former comprises a method of measuring the length of the fetus, while the latter consists merely of measurement of the distance between the symphysis pubis and the upper extremity of the uterine fundus. It is by a comparison of the measurements so obtained with the average normal prevailing at term that impressions of fetal size are supposed to be obtained. As a matter of fact, the Ahlfeld and McDonald measurements show such marked variations depending upon the type of presentation, the parity of the patient, and the amount of amniotic fluid that almost anyone will admit that the experience gained by the examination and subsequent delivery of even a comparatively small number of patients will permit of better estimates of the size of the fetus than any other method at our disposal. This experience combined with adequate measurement of the pelvis furnishes us with the most reliable means of ascertaining the probable occurrence of disproportion and of estimating its degree.

Pelvimetry itself may now be termed an exact science inasmuch as the comparatively recent application of the x-ray to pelvic diagnosis has done away with the deficiencies of other methods commonly employed for this purpose. While it is still proper to speak of borderline disproportion since we can not positively evaluate the fetal factor, it is incorrect to speak of borderline pelvic contraction. For practical purposes it is necessary to inquire only into the size of the pelvic inlet and outlet in order to obtain an accurate impression of the size of the pelvis from the obstetrical viewpoint since the pelvic canal is narrower in these zones than elsewhere. Strictly speaking, the narrowest diameter of the lower part of the pelvic canal is that between the ischial spines. It is, however, located so close to the ischial tuberosities that its length varies rather directly with that of the latter and may by implication be safely inferred therefrom.

Measurement of the pelvic outlet involves no difficulties whatever, since all the bony landmarks by which it is defined and which mark the terminations of its various diameters are accessible to direct palpation. These diameters can, therefore, be measured easily by any suitable pelvimeter of which, however, the one devised by Thoms is the most satisfactory. Although recognition is given to the fact that it is impossible to describe the size of any irregular passageway in terms of only one diameter, yet it suffices our purpose of estimating the obstetrical capacity of the outlet to begin with the measurement of the transverse or so-called bituberous diameter. If the measurement so obtained approximates the normal of eleven centimeters, we can be assured, in the absence of some obvious deformity of the sacrum and coccyx, that there is sufficient room for the passage of even a very large child. The anteroposterior diameter is of slight practical value for the reason that when the transverse diameter is shortened, the pubic arch is at the same time so narrow that the fetal head cannot utilize the anterior limits of this space. The possibility of its birth will in such cases depend not upon the length of the anteroposterior diameter but rather upon the length of the transverse diameter taken together with the distance between it and the tip of the sacrum (or the coccyx if it is fixed). This latter distance is called the posterior sagittal diameter and should be measured whenever the transverse diameter is shortened. When the sum total length of both these diameters is less than 16 cms., it is extremely unlikely that an average-sized, full term, fetal head will be able to pass through the pelvic outlet. Here again it is evident that the estimated size of the fetus will play a big part in the formulation of our impressions of probable disproportion and consequently of our plan of management of labor.

In the case of the pelvic inlet unlike that of the outlet, we are for obvious reasons unable to employ a mechanical pelvimeter for the measurement of any of its diameters. We attempt to obtain our impressions of its width through measurement of the interspinous and intercrestic diameters of the ileum. These are, however, external measurements of the false pelvis occupying a much higher plane than that of the pelvic inlet, and consequently show extreme variations dependent solely upon the slant of the iliac bones and upon their thickness and that of the overlying tissue. They may provide information as to the type of contraction, whether due to disease or developmental deficiency, but they never accurately portray its degree. Estimates of the anteroposterior diameter are obtained by subtracting 1½ to 2 cms. from the length of the distance between the under surface of the symphysis pubis and the sacral promontary as determined by internal digital measurement. Although obtained by computation and thus subject to error, this measurement is in itself quite reliable as proven by comparison with similar measurements made by x-ray. When the computed true conjugate has a normal length of 11 cms., we have every reason to believe that in the absence of some obvious deformity due to disease the inlet as a whole is of normal size. When, however, it is shortened, it is advisable also to know something about the width of the inlet in order to judge of its capacity. This is possible only by those forms of x-ray pelvimetry which furnish us with a graphic geometric picture of the entire inlet since they alone enable us to measure any and all of the many diameters that extend transversely from one side to the other[1]. In cases of pelvic contraction we are interested not in length of the greatest transverse diameter, because it lies too close to the sacral promontory to be utilized by the fetal head, but rather in the greatest available transverse diameter. It is our opinion that this is located 4 cms. anterior to the promontory for reasons outlined in a paper published in 1932.[2] At the same time we stated our belief that the length of this diameter plus that of the anteroposterior diameter must equal at least 19½ cms. in order to make possible the passage of a normal fetus. If x-ray pelvimetry is not available, it is better to base one's impressions of the size of the inlet on the length of its anteroposterior diameter alone rather than upon any external measurements which may be taken. In this connection it may be well to mention the fact that it is impossible to diagnose disproportion my means of a simple flat x-ray picture of the head at the pelvic inlet. Efforts to determine in this manner whether the shadow cast by the head is larger or smaller than the space provided by the pelvic inlet can only lead to erroneous conclusions since the head being nearer the point of origin of the rays will inevitably cast a bigger comparative shadow than it would if it lay in the plane of the inlet itself.

Summary: The significance of cephalopelvic disproportion from the standpoint of both mother and fetus has been mentioned, and the importance of its early recognition has been emphasized. A diagnosis of its approximate degree, if present, may always be made at term and before the actual onset of labor although an absolute diagnosis of so-called borderline disproportion may be impossible without a carefully observed and carefully conducted test of labor. This is due to the fact that we cannot arrive at an exact evaluation of such factors as the size of the fetus and the moldability or compressibility of its head. Every possible means should be employed which may be useful in making a diagnosis, but of these a comparative study based upon careful estimates of the size of both fetus and pelvis is of most universal application.

Pelvimetry can be rendered simple and intelligible if we remember that the index of the size of the outlet is furnished by its transverse diameter while that of the inlet is afforded by its anteroposterior or so-called true conjugate diameter. Only when the transverse diameter of the outlet is shortened by more than 2 cms. will it generally be necessary to make one additional measurement, namely, that of the posterior sagittal diameter. Similarly, it is advisable to measure the available transverse diameter of the inlet if its anteroposterior diameter measures less than 10 cms. This, however, can be done only by x-ray, and if this not at hand, it is better to rely solely upon the length of the true conjugate than upon the more fallible external measurements in forming our opinion of inlet capacity.

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PROBLEMS IN THE DIAGNOSIS AND MANAGEMENT OF PULMONARY TUBERCULOSIS

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The diagnosis of frank open pulmonary tuberculosis is obviously simple. The only necessity is to think of the condition and the diagnosis will establish itself. In the latent, incipient, or atypical manifestation the diagnosis becomes more difficult and regardless of one's experience one must resort to added measures to the routine physical examination to confirm or deny the diagnosis. Further, the diagnosis of pathology does not necessarily signify activity and it is undoubtedly these cases of evidence of tuberculosis in the lung which, when associated with other disease processes, frequently give us our most difficult problems. It is these cases which necessitate additional and expensive laboratory examinations which frequently pass from the general practitioner to the specialist; not because of incompetence on the part of the attending physician, but because of the general unwillingness on the part of the patient to undergo the additional expense under the direction of his own physician.

Undoubtedly, these questionable cases require a great deal of time on the part of the attending physician; history taking, with the proper evaluation of the information given, is important. A history of contact with a case of tuberculosis, particularly during the period of adolescence, is suggestive, as is a history of a marked preponderance of respiratory infections or such systemic infections associated with respiratory pathology as whooping cough, measles, influenza. Evidence of cervical adenitis involving the whole chain of glands or the presence of skin tuberculosis in one of its many forms, a long standing arthritic syndrome, all these are of importance in completing the final picture. Minor findings which may be overlooked in obvious cases assume importance in our borderline cases, as asymmetry in the chest configuration and mobility, presence of Pottinger's sign of muscular spasm, infra-and supra-clavicular retractions, or minor changes in the percussion note not explained on anatomical differences. Those early auscultatory findings such as fine crackling rales at the end of inspiration or a prolongation of the expiratory phase or the tone changes in the expiratory phase are well known. What frequently is overlooked in auscultation is the diminution or absence of the normal.

A careful physical examination with recognition of the above minor changes and association with such extra-pulmonary findings as the anterior—posterior curving of the fingernail, a slight cyanosis of the fingernail, atrophy of the inter-ossei muscles of the hand, atrophy of the muscles of the wrist and lower forearm, add to the picture suggesting pulmonary pathology. These latter findings are by no means restricted to tuberculosis, but merely indicate some circulatory and probably nutritional interference due to thoracic disease. When these are present and associated with a history of clinical course suggestive of tuberculosis, we may consider them as positive findings towards establishing our diagnosis of pulmonary tuberculosis.

The early clinical course or history is frequently misleading if we still maintain the early conceptions that cough is our earliest and most significant symptom. Even in extensive cases cough may be entirely absent due to the localization of the pathology. Our earliest symptomatology is that of toxicity—languor and fatigue, loss of appetite, a loss in weight and in strength and a general feeling of ill-being. Sooner or later the patient has a flushed or feverish feeling which often precedes an actual rise of temperature as recorded by the thermometer. However, quite early we find a disturbance in the normal temperature and one must remember that the important element in the temperature curve is not alone the actual rise above our accepted normal but the variation from minimum to maximum. The cough, when present, is at first not productive, but a dry characteristically hacking cough, due, the patient says, to a dryness in the throat. and, if he is a smoker, he attributes it entirely to his smoking. As the cough becomes productive, generally the early sputum is thin and glary and only later becomes purulent, due to the presence of a mixed infection. The isolation of the tubercle bacillus is of course diagnostic, but in these early cases one often cannot isolate the organism on simple, direct smears. Of value in

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finding the organism is a careful stain prepared by the antiformin method and a sputum should not be considered negative until at least three smears so prepared have been examined from the sputum obtained on successive days. Occasionally Much's granules, which are considered to be deteriorating or degenerating bacilli, may be found when the actual organism cannot.

When, having completed a careful history, physical examination, study of the clinical course and sputum examination, we do not arrive at a definite diagnosis, other measures must be resorted to and in this respect I consider a careful roentgenological study of prime importance. In fact, where the economic situation permits, I include this study in the routine initial examination. A good study not only reveals gross changes but reveals early and minute changes, which, because of their location, possibly would not be found on a physical examination. Further, this study may be done in conjunction with the tuberculin test where changes occurring at the peak of reaction can be demonstrated in the films when compared with films taken prior to the test. I consider this study of such great importance that I suggest a standardization of technique so that films taken in a given institution or clinic will reveal a uniformity which is of decided value in making comparisons from month to month, or year to year, in any given case. In this study at the Augustana Hospital, Chicago, we observe the following routine:

It is important that the patient be entirely disrobed from the chest down to the waist, so that no artefacts from wearing apparel are superimposed on the roentgenograms.

Examinations of the chest are taken stereoscopically in the P. A. view and roentgenograms are also made in the true lateral views. It is important in taking roentgenograms of the chest that the patient be as quiet and as passive as possible as excitement ofttimes interferes with the quality of the roentgenograms. The patient is instructed to take a comfortably deep breath and hold the breath subsequent to elevating the thoracic cage. Then, after an interval of a few seconds, the exposures are made. This management insures the best detail.

The following technic is customarily used in the average hospital for examinations of the chest. However, the technic should be flexible depending upon the capacity of the equipment.,

100 M. A. of current—Distance from target of tube to film—40" for stereoscopic work. Kilovolts Peak (depending upon the thickness of the patient) 60 to 68. Time of exposure—1/10 to 2/10 seconds.

For lateral views—100 M. S. of current—Distance from target of tube to film—40". Kilovolts Peak (depending upon the thickness of the patient) 72 to 78. Time of exposure—5/10 to 1 second.

Many institutions take roentgenograms of the chest at six and seven feet distance. Technic for six foot distance—100 M. A. of current—(P. A. position)—Kilovolts Peak (depending upon the thickness of the patient) 68 to 75. Time of exposure—5/10 to 1 second.

Technic for children. P. A. position—100 M. A. of current—Kilovolts Peak 52-60. Time of exposure—1/20 to 1/10 second.

Having determined the presence of tuberculus pathology, we must next determine activity. We are guided there mainly by the clinical course and condition of the patient. However, there are times when the symptoms are so slight that we must recognize the possibility of their arising from some concomitant condition and that the tuberculous focus may be quiescent. Here, the Mantoux or intradermal method of administering the tuberculin is of most value. This consists of injecting intradermally varying dilutions and amounts of old tuberculin. The initial dose is one-tenth c. c. of a solution containing one-tenth m. g. of old tuberculin. This is gradually stepped up until the dose given is one m. g. The observation of the test itself includes a temperature check every two hours for forty-eight hours prior to the administration of the vaccine, and a similar check subsequently. The positive reaction to this test is of a three-fold nature: first, local, comprising an area of redness at the site of injection, which, when appearing alone, denotes only the presence of the infection; second, a general reaction consisting of elevation in temperature and a general aching, tired feeling; and, third, and most important, the focal reaction, consisting of an exaggeration or extension of the physical findings at the site of infection. In the lung these changes may be seen in the x-ray and these focal changes denote activity within the lesion. Blood changes are as yet only suggestive in the diagnosis, but of great aid in following the course of the condition and aiding in the prognosis. The initial blood-count in uncomplicated tuberculosis shows frequently a mild leucopenia

and a mild secondary anemia. The white count shows a relative decrease in polymorphs and a relative increase in lymphocytes. The Schilling index or the Arneth nuclear count are of most importance when compared with subsequent examinations. The sedimentation test is rapid in tuberculosis and when the rate of sedimentation is found to be increasing in successive examinations we find this rate corresponding with an increased rate of activity, clinically and pathologically.

Animals may be used when the above means and methods fail to reveal our diagnosis. The sputum is injected intraperitoneally, preferably in a guinea-pig which is killed at the end of six weeks should it be living at the end of this time. A very careful autopsy, with particular attention to glandular involvement with microscopic examination of such involved areas, should then be done.

We feel that if each one of us would follow through with every suspect case we could definitely prevent overlooking or misleading our patients, and there is nothing in this examination which is not practical and sufficiently simple but that it might be used in conjunction with any institution or group. In the differential diagnosis, which I will not attempt to take up in detail, I would mention, however, that probably the most common condition to give rise to the clinical picture of tuberculosis is sinusitis, or a simple posterior nasal drip. Also necessarily borne in mind is chronic bronchitis, or bronchiectasis, either one of which however may have a tuberculous etiology or may be present in one portion of the lung with active tuberculosis present elsewhere.

From the standpoint of the management of our tuberculous patients, we have always felt introduction of our patient to his diagnosis is the most important determining factor in our successful management of that patient. We have no compassion with any one who hides this diagnosis from his patient. That patient is essentially a human being who would probably cooperate with us during an acute disease with its subsequent short convalescent period, but he, like ourselves, will not observe the necessary care and precaution over a period of over six months, and occasionally many years, on a flimsy diagnosis of bronchial trouble. Instead, he should be duly impressed with the fact that he has tuberculosis and herein we meet his level, using the terminology which we know he will understand, as often our patients have no conception of the meaning of the word tuberculosis, and even less commonly of phthisis. We, therefore, tell them, "You have the con, or T. B.," or "You are a lunger," or any other lay expression which will make him realize his condition. We mince no words. He must realize as we do that his condition is serious and as much as his well-being is in our hands, so our professional reputation is more or less in his hands, and we therefore have a right to demand complete cooperation, and, lacking this, to refuse him the benefit of our services.

Having established the diagnosis and presented it to the patient, we must determine a course which will be compatible with that individual's economical and personal condition. It is all very well to tell our patient that he should be in an air-conditioned, barometrically controlled, and ultra-violet equipped room, or ship him to a different climate, but how many patients do we meet who are even in a small measure financially able to do this? There is no question in any one's mind but that sanitorium care is, in the average case, the most desirable, be that sanitorium publicly maintained or private. With the present state of depleted personal and public finances, the family is too frequently unable to finance the private institutional care, and likewise the publicly maintained institutions are running on decreased budgets with an ever-increasing demand for their services. Necessarily, we must observe then a practically home management regime. In the home the two most important considerations are: first, that all minor contacts will be removed from the patient, and second, that the patient has his own comfortable bed in his own private room or sleeping-porch. If we can insure these two factors—prevention or spread of the infection and complete bed-rest for our patient, we will be observing both the fundamental public health requisite and the fundamental requisite for the improvement of our patient. We have always heard that the three essentials for the tuberculous individual are rest, good food and fresh air. They always have, and they always will be, in spite of any accessory means employed in the treatment of the patient. We can never attempt to dispense with any one

of these three. By far the most important is rest, and for that first month of the patient's incarceration we insist upon complete bed-rest, allowing only bathroom privileges in those cases where the temperature does not exceed 101. Meals should be served to the patient in bed. A definitely stated rest period, preferably from 1:00 to 3:00, should be observed through the entire course. All lights should be out and the patient quiet by 9:00 P. M. It is possibly an arbitrary point as to whether that patient should be awakened in the morning for his breakfast. In my opinion, sleep is so important that he should never be aroused from it. The diet should be general, wholesome, well-balanced in all the elements, and never precludes forcing. The patient should have three good meals, and if his appetite permits mid-meal feedings, by all means they should be given, but food should never be forced. Fresh air obviously is important to each and every one of us; whether that should be cold air or warm aid depends entirely upon the comfort of our patient. We do know that there are certain types who do better in cold than in warm, and likewise others who do better in warm than in cold, and herein we must realize we are dealing with an individual and not with a case. The patient is taught to take his own temperature and pulse, a record of which should be kept by the patient for periodic examination by the attending physician. Routinely the temperature is taken every four hours and one day a week every two hours. In keeping his chart he is also instructed to keep a simple, clinical diary so that when he is examined from time to time all questions concerning his condition will be a matter of record. This keeps the patient well satisfied and the physician well informed. He is instructed as to the use of paper napkins or other easily destroyed articles for the receiving of his sputum and for covering his mouth. It is practical for the patient to pin a paper bag at his bedside to receive these waste articles. His dishes should be isolated from those of the family and should be washed after the other dishes have been taken care of. In occasional instances, it may be desirable to use a disinfectant in the destruction of the stools or urine. Whether the patient should have medication or additional measures in the therapy depends upon the individual entirely.

We may or may not employ sun-baths, but only very rarely should these sun-baths include the chest exposure to the direct rays. If a sun-bath is considered advisable, we can usually have our patient receive all the benefits wherever he is by moving the cot in the open or to the open window and wearing a bathing suit. Should a pneumothorax be indicated, this can very simply be performed in the home without any great inconvenience on the part of the family or the physician. It is a simple, safe and frequently necessary proceeding and should never be kept from the patient simply because he cannot be hospitalized.

Practically all of this information is given to the patient as soon as the diagnosis is established. He is told that this regime must be followed for a long period of time, but he is then given the moral encouragement that he has been let in on 'the ground floor' and he is willing to cooperate as a partner in the deal.

We have purposely avoided any discussion as to the medicinal therapy employed. It is granted that this will vary widely, but this variation arises mainly from the attending physician's knowledge of his patient's psychic makeup. There are, after all, few drugs of definitely proven merit. We must employ, from time to time, a minimum dosage of a suitable sedative to allow the patient periods of freedom from cough. We are, however, unalterably opposed to any prolonged use of narcotics except in the very extreme terminal conditions. Cod-liver oil is probably one of the most widely used adjuncts, but with our present advance in the isolation of the vitamins A and D we can probably use these individual vitamins in conjunction with more palatable fats with equally good or even better clinical effects. For the past two years we have been using large amounts of calcium gluconate with the vitamins and have observed a definite difference in the rate of improvement or in the length of the initial check of the progress of the infection as compared with the previous experiences. We are not overlooking the fact that we may be observing a different type of organism than was previously found.

In conclusion, we merely hope to emphasize the importance of a complete and thorough examination of the patient and feel sure that if the investigation is conducted with observance of min-

ute details in conjunction with a complete laboratory examination, we will all arrive at the same conclusion. In the management of a patient we must learn not to be foolishly sentimental and attempt to spare the patient by withholding necessary information as to his condition. He will only suffer in the end and the physician will have lost his patient's confidence and possibly the patient himself.

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RHINITIS WITH VINCENT'S ORGANISMS

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In a review of recent literature I find very few cases reported of Vincent's infection in the nose. The case here reported is the only one I have seen in over twenty-five years of practice. On inquiry I find many rhinologists who have never seen a case. In 1925 Pirot reported 2 cases[1]; in 1929 Hollander reported 3 cases following nasal operation,[2]; in 1931 Ersner and Pressman reported a case following a tooth extraction,[3]; in all these 6 cases, 2 of them died and 4 lived after arsenical treatment.

In view of the rarity of this infection in the nose I wish to report the following case. Male, single, aged 26 years, was seen in my office October 23, 1933, complaining of fetid purulent discharge from his left naris. This came on after having some left upper teeth extracted some 2 months before, when "dentist also treated his nose for an acute cold." I found left naris completely blocked by markedly swollen and edematous turbinates, especially the middle one. There was a profuse, very fetid, thick, purulent discharge from the left naris of a somewhat milky curdy consistency and appearance and with a very foul odor. His left eyelids were considerably swollen and edematous.

On shrinking the turbinates with cocain and adrenalin it was seen that this purulent material covered all the left nasal mucosa and seemed to reform about as fast as it could be wiped away; the mucosa of the turbinates bled easily on slightest manipulation. Transillumination showed the left antrum to be definitely dark. X-ray of sinuses showed left antrum cloudy. His blood Wassermann test showed negative. A smear and culture from his nose revealed, no diphtheria, and no streptococci, but spirilla and bacilli of Vincent's angina. (Murphy's Laboratories report.)

The patient was given 3 grains of sodium cacodylate (hypodermic) on Oct. 25; another dose on Nov. 2, since when I have not seen him; but friends have reported to me that he is all right.

His antrum was not irrigated, as I did not wish to make any fresh wound in his nose in the presence of such an infection, until I had same under arsenical control.

The patient was very negligent about coming in for treatment, the last one being Nov. 2 when he was far from cured.

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HUMAN BREAST MILK IN THE TREATMENT OF ENDOCRINE OBESITY

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One of the major problems in endocrine therapy is the inability to obtain pure, unaltered, active products. In the processes of extraction and under the influence of digestive agents, the active principle of the glandular products necessarily becomes modified. It is partly for this reason, that some endocrine therapy falls short of expectations, especially ovarian and testicular extract therapy.

This same problem exists in the treatment of endocrine obesity. In spite of the administration of maximum doses of the dynamis group of ductless gland extracts, mainly thyroid, anterior pituitary lobe and adrenal substance, I found that some cases did not respond. That is, they either did not lose, or lost for a while and then became stationery. As a result of these failures, I searched for some agent that would contain the dynamic group of hormones in an unaltered form and could be administered subcutaneously without any ill effects. For a while, it appeared that the urine of pregnant women would fulfill these requirements. However, inasmuch as the urine had to be filtrated, and administered in such large doses that reactions similar to serum sickness and abscesses with subsequent sloughing were obtained, I was forced to look for some other substance. It appeared to me that human breast milk was the answer to my problem. Knowing that Patel (Lyon med. Apr. 1920) had used it for the treatment of hypertrophied breasts without any harmful results, I began two years ago to administer to those cases that resisted all recognized forms of treatments. The results obtained were satisfactory. To illustrate,

I should like to present two cases that are of special interest.

Case 1. G. M., a female, aged 39 years, 59½ inches in height and 188 lbs. in weight first came to me July 1, 1933, complaining of asthmatic attacks for several years at very frequent intervals which were becoming worse until she experienced these attacks at least once a day. She also complained of general weakness and nervousness. She claimed that she ate very little and was gaining in weight which aggravated her condition. Examination revealed:

Universal distribution of adipose tissue.

Pulse 84; blood pressure 110/70; respiration, 16; temperature, 97.5° F.; basal metabolism rate, -15.5.

All other findings, as blood serology and chemistry, urine and kidney function tests, sugar tolerance, carbon dioxide tension of the blood, liver function tests, electrocardiograph, x-ray of sella turcica and x-ray of chest were essentially negative.

She was placed on a diet of 800 calories per day for one week. Her weight remained stationary. Then, in addition to above diet, she was given thyroid substance gr. 11/2 per day gradually increased to gr. 3 per day and other glandular therapy. At the end of three months, she lost 40 lbs. In spite of increased dosage to gr. 10 per day of thyroid substance, patient remained stationary for the following month. On November 1, 1933, I began the administration of unchanged human breast milk three times a week in 5 c.c. doses gradually increased to 15 c.c. subcutaneously until 15 injections were given. In addition, one grain of thyroid substance and other glandular products were administered orally. She began to lose again. Now, February 1, 1934, she weighs 122 lbs., having lost 66 lbs. in a period of seven months.

During the past five months, patient has had no asthmatic attacks. She has a sense of well being that she never experienced before, and eats an amount of food normal for her caloric requirements.

Case 2. Miss E. R., aged 18 years, 60¼ inches in height, weight 155 lbs., first came to me May 1, 1933, with following history:

Since the age of twelve years, she had been increasing in weight until the age of fourteen, when she became stationary at 153 lbs. and has been remaining so in spite of vigorous dieting, much medical care, and frequenting many lay reducing institutions. Also, she complained of hypomenorrhea and irregular menstruation. Examination revealed:

Universal distribution of adipose tissue with extraordinary hypertrophy of the breasts.

Pulse 60; blood pressure 114/85; basal metabolism rate -20.3; temperature, 97.0° F. All other findings as in above case were essentially negative.

Patient was placed on a diet of 1200 calories per day for five days at which time patient gained 1¼ lbs. She was then placed on a 1000 calories per day for three days at which time patient gained ½ lb. She was placed on 800 calories for three days. The weight remained stationary. At this time, 3 gr. of thyroid substance per day gradually increased to 6 gr. per day and other glandular products were added. Under this regime she lost 20 lbs. in four months. She remained stationary the following month. At this time, October 1, 1933, the administration of human breast milk exactly in the same manner as above case was begun. In one month she lost 8 lbs. The milk treatment was discontinued at the end of one month. In spite of maximum doses of thyroid substances and other glandular products and a diet of 800 calories per day, patient regained 7 lbs. in two months, January 1, 1934, at which time patient was admitted to a hospital, where human breast milk was available at any time. There she was given subcutaneous injections of 5 c.c. gradually increased to 15 c.c. of human breast milk on alternate days, ½ gr. thyroid substance per day, and a diet of about 1200 calories per day. At the end of one month patient lost 14 lbs. making her weight 107 lbs. I might add that she has a sense of well being that she never experienced before. Her attitude toward life is much brighter. Her menstrual flow has increased in amount and has become regular. Basal metabolism rate and pulse rate have become normal. All other findings are still normal. Also, the breasts have diminished in size remarkably.

In conclusion I wish to state from my experiences with the use of human breast milk in many cases, especially the last two cases, there is much promise of its future clinical use for the treatment of endocrine obesity, and venture to suggest further study of human breast milk by laboratory workers.

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DIFFERENCE IN THE REACTIONS OF ALCOHOLICS

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This patient was admitted to the Chicago State Hospital November 2, 1933, and diagnosed alcoholic psychosis, pathological intoxication.

Our note from the psychopathic hospital states that "patient is a markedly deteriorated appearing male who is filthy in his bodily cleanliness. He was here in June, 1932, and committed to Elgin. He has apparently been drinking excessively."

When admitted to the Chicago State Hospital he was received on a stretcher. He was weak and tremulous but cooperated in the examination. He seems to be interested in his surroundings, is clearly oriented, general knowledge, calculation and judgment are fair. He also had insight; knew his condition was due to drink. He denies

that he has heard voices or seen strange things. He answered everything to the point. He knew he was here one week and before he came here he was at the psychopathic hospital for several days but he does not know how he got to the Psychopathic Hospital. He said he was a watchman in a coal yard in Calumet City. While working he began drinking and he does not remember anything that happened to him until he woke up at the Psychopathic Hospital.

Patient states he left the Elgin State Hospital about three months ago and has been drinking steadily until his commitment. However, he claims definitely that he does not remember seeing visions or hearing voices or knowing anything at all until he woke up in the Psychopathic Hospital.

While in our Staff Meeting he admits that he was drinking about a quart of whiskey a day which was of poor grade. He paid about 35 cents a pint.

While moonshine, apparently, is soon going to be a thing of the past in the United States, still what we have learned from the effect of moonshine on people is still worth while considering. As I have reported time and again, the psychosis of patients using moonshine whiskey differs from that of the regular alcoholics, as they develop a complete amnesia, as in this case, when they do not remember anything that has happened to them, even their hallucinosis. They differ from the delirium tremens of alcoholics. Where they do not remember the events as they happen but they generally remember the hallucinosis they have experienced, such as seeing snakes, pink elephants, etc., which is known to everybody.

When they develop an acute hallucinosis it is usually of the auditory type while in the case of drinking moonshine or cheap whiskey it is generally the visual type. It goes to prove that the different nerve cells have a predilection for different poisons. It has been known for a long time that the optic nerve will be poisoned by wood-alcohol while the rest of the nerve cells might not be affected by that poison in the same amount.

However, it has not been known before that the different nerve cells of the cortex, that is, it has probably never been proven that some cells in the cortex will have a predilection for a poison, while others in the same cortex will not. However, that such is the case is proven by the reaction of people to the different forms of alcohol. Granted that this is true, we might also expect in the general nutrition that some cells of the cortex are benefited by nutrition while other cells will not be benefited but might be starved by the same nutrition.

Considering the complexity of the nerve cells we can readily understand why some people will develop a psychosis under the same circumstances that others will not.

Case presented at the Polish Medical Society, Nov. 15, 1933.

SODIUM SALICYLATE, CALCIUM GLUCONATE, PARATHORMONE, THE BASIC MEDICINES IN THE ACUTE INFLAMMATORY DISEASES, ACT AS THE SPECIFIC REMEDY IN THE TREATMENT OF LOBAR PNEUMONIA

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Inflammatory diseases may be divided into two groups, infectious and organic. In the first group may be placed such diseases as lobar pneumonia, scarlet fever and erysipelas, while appendicitis, cystitis and myocarditis are examples of the second group. The treatment of inflammatory diseases will be made easier and simpler if we regard them in the light of their general pathology, with acute, subacute and chronic stages, their symptoms and signs as active or passive, and their etiology as specific or idiopathic, and if we classify our drug and physical therapies according to their actions as being either sedative, stimulative, alterative, basic, and specific. The sedative drugs are to be used for their astringent and absorbing effects on the exudation of the acute pathology, and for their mitigating and alleviating effects on the active signs and symptoms. The stimulative drugs are used for their lytic and irritating effects on the fibrous infiltration of the chronic stage and for their exciting effects on the passive signs and symptoms. The alterative drugs are used for their nutrient and tonic effects on the body, and the specific drugs for their curative and destructive effects on the causative agent. The basic drugs form the nucleus of the various medicines used in the treatment of diseases on account of their curative effects on the products of inflam-

mation and for their mitigating effects on the signs and symptoms arising from the pathology. The basic medicines used in the acute stage are the combination of sodium salicylate, calcium salts and parathormone; in the chronic stage, a combination of sodium iodide and vaccines (and thyroxine), and in the subacute stage, which is the intermediate or convalescing stage, are a combination of calcium salts, sodium iodide, and parathormone (and thyroxine). All our diseases should be treated along some definite or proper line of procedure. This can be done by selecting the drugs and other therapy to combat the existing pathology, signs and symptoms, and arranging them in some sort of a formula. This formula will be known as the basic formula and should include the basic, specific, palliative and alterative drugs.

Lobar pneumonia is an acute infectious disease. Its pathology is that of acute inflammation of the lung and is characterized by fever, redness and swelling or induration which consists of an exudation of serum and infiltration of red and white cells and some fibrin into the lung tissue. The signs and symptoms of lobar pneumonia are those of increased activity of the respiratory and cardiac systems, namely, cough, expectoration, pleuritic pain, dyspnea, cyanosis, increased pulse and respiratory rates, dullness, râles and bronchial breathing. The disease is usually ushered in with chills and pain in the chest, and runs a definite course of ten days, when the illness usually terminates with the so-called crisis.

In the treatment of lobar pneumonia the drugs and physical therapy used in the basic formula are selected to correct the acute inflammatory process in the lung, to palliate active signs and symptoms, to support the body, and to prevent if possible, such complications as pleurisy, bronchitis, heart collapse and relapses. Chief among the drugs will be the basic ones, which because of their curative effects on the pathology of the lung will play the rôle of the specific drug. So far we have no specific drugs in the treatment of pneumonia and if we ever do have as specific serum, the basic medicines will enhance the action and hasten recovery. Such an effect I have encountered with the sera, Nos. 1 and 2, for pneumonia. The adjuncts to the basic medicines will be the palliative drugs, physical therapy and alterative drugs, the latter being used in the convalescing stage of lobar pneumonia. The method of choice in the administration of these drugs is the intravenous and subcutaneous routes.

In addition, the treatment for lobar pneumonia will include a systemic and local course of treatment. The remedies used in the systemic treatment are for the purpose of supporting the body during the illness and restoring it to normal after recovery. This is accomplished by the administration of tonics and foods, through elimination of waste products, and the detoxication of toxins of faulty metabolism.

The tonics comprise the drugs and physical therapy used for their alterative effects on the blood, nerves and appetite. They are employed especially in the convalescing period. The preparations generally prescribed for this purpose are two teaspoonsful before meals of elixir of glycerophosphate compound, syrup of hypophosphite compound, or elixir of iron, quinine and strychnine, with two capsules of halibut liver oil (haliver oil) with vitamines A and D, once daily. If more rapid results are desired it is best to give intravenously 5 c.c. of Upjohn's glycerophosphate compound or a 5 c.c. ampoule of Pitmann Moore's iron glycerophospate compound and a 5 c.c. ampoule of calcium chloride three times a week, with the two capsules of halibut oil. A prolonged convalescing period will be benefited by a course of violet ray treatment and twice a week injections of 1 c.c. of Liver Extr. (Lilly).

The elimination of waste products is accomplished by means of sudorifics, such as salicylates, wet packs and autocondensation, diuretics, such as the acetates or citrates and caffeine citrate, and by cathartics such as calomel followed by a saline in four to six hours, enemas and petrolatum.

The products of faulty metabolism are the uric acids, indican, skatole, and "acidosis." Their detoxication is accomplished through the aseptic foods, such as the starchy products (cereals, toasts), fruit and fruit juices, water and milk, mineral waters, and antiseptic medicines, such as sadol, fel bovis, colchicine, kaolin, bacillus acidophilus, and hepatine extract. Acidosis may be combated also by intravenous injection of a 5 c.c. ampoule of calcium chloride and a 20 c.c. ampoule of 50 per cent. dextrose, or 10 c.c. of Lilly's glucocalcium, repeated daily as long as anorexia and vomiting persists. Sodium

salicylate may be added to the mixture of calcium and dextrose.

The local treatment will deal with the respiratory tract, especially the diseased lung, the heart and any other diseased organ whose condition may be exacerbated by the presence of the pneumonia. The treatment will contain the basic formula, which includes the palliative drugs, the specific seras, and the basic medicines.

The palliative measures include the sedative drugs and physical therapy to alleviate any active symptoms and the stimulative drugs to meet such emergencies as cardiacs and respiratory failure. These measures may be listed as follows:

1. Adhesive tape to immobile the chest for pleuritic pain.
2. Wet packs (these are rarely used).
3. Codeine sulphate gr. ¼ for pain and for the tickling cough. It may be given alone or in such cough compound as syrup of thiocol.
4. One or two allonal tablets by mouth or sodium luminal, gr. ii, by hypodermic for restlessness and insomnia.
5. Tincture of digitalis, dr. ¼, four times a day or two ampoules of digifolin daily to digitalize the heart. This is given usually during the first three or four days of the illness, e. g., to digitalize the heart in case of myocarditis.
6. Lilly's ephedrine compound, No. 30, with merthiolate or a combination of ephedrine inhalant, dr. ii, pineoleum q. s. ad. oz. i, is given as nasal drops as needed for nasopharyngitis.
7. For respiratory failure, coramin or alpha lobalein hypodermically, and in extreme cases the administration of oxygen.
8. For cardiac fibrillation, digifolin.
9. For cardiac collapse, a mixture of adrenalin and pitressin or suprarenal and pituitary gland extracts.

The specific remedies in lobar pneumonia are the two sera, known as Serum No. 1 and Serum No. 2. Before they can be used, the pneumococci must be first isolated and then identified. This necessitates a delay and then there is only twenty-five per cent. of chance that either one of these sera can be used in the given case. Another drug which may be considered a specific is potassium guaiacol sulphonate which is given in the form of *calcicol,* for its bactericidal action. The sera and the potassium guaiacol sulphonate play a minor rôle in the category of a specific as do the basic medicines, sodium salicylate, calcium gluconate and parathormone. Sodium salicylate is used for its antipyretic and antiseptic effects; calcium gluconate for its astringent effects on the capillary walls and its absorbent effects on the exudation of the inflamed lung, while parathormone is used to increase the blood calcium and to enhance its action.

In the treatment of lobar pneumonia and other inflammatory diseases these basic drugs are best administered whenever possible in the following manner: A 10 c.c. ampoule of 20 grains of sodium salicylate and a 10 c.c. ampoule of calcium gluconate, 10 per cent. are given together daily, preferably in the afternoon, through the crisis or until the temperature drops to 99° and pulse to normal rate, when they are given every other day for seven to ten days. If the temperature remain above 102° and râles persist in the consolidated lung, it is advisable to give the injections twice daily, morning and evening. Calcicol may be used in place of calcium gluconate if an expectorant and bactericidal agent are desired (and if the pneumonia is caused by the Freidlaender's B). Calcicol is a compound of calcium and potassium guaiacol sulphonate.

If the intravenous injection of salicylate and calcium is objectionable, one may prescribe two to four tablets of cal-aspirin every three hours as needed, or two teaspoonsful, p.r.n. and then four times a day of this mixture:

℞. Codine sulphate .....gr. vi
Sodium salicylate .....dr. iv
Calcii gluconate .....dr. iv
Aq. distil. .....oz. ii
Syr. cocoa q. s. ad.....oz. vi
M. et sig. 2 dr. q. three hours p.r.n.

Parathormone, 1.5 c.c., is given hypodermically daily until the temperature drops to 99° when it is given in 1 c.c. doses every other day until the temperature, pulse and respiration are normal, when it is discontinued. On rare occasions, as when edema of the lungs develop, it is necessary to resort to 2 c.c. of the parathormone twice a day until the condition clears up. In the presence of high fever above 102° it is advisable to give the maximum dose of 1.5 to 2 c.c. of parathormone and not the small dose of 0.5 c.c. as recommended in the literature. It requires twelve to sixteen hours for the parathormone to effect a drop in temperature and mitigation of the signs and symptoms. In infants and young children I have found that 0.5

c.c. to 0.625 c.c., in older children 1 c.c. may be regarded as the maximum dose in the presence of high fever and any acute condition such as pertussin and asthmatic attacks.

The results obtained by the proper administration of sodium salicylate, calcium gluconate and parathormone as outlined above are very gratifying as one can judge from the following findings:

1. Lobar pneumonia can be aborted if the treatment is started within eight hours after the onset of chills, fever and pleuritic pain.

2. Lobar pneumonia can be prevented if treatment is carried out early in all influenza cases, threatening pneumonia, postoperative conditions with chills, fever, and patches of râles in the lung.

3. Complications, such as pleurisy and relapses, are rarely encountered if the treatment is continued for a period of seven to ten days longer after the temperature, pulse, respiration and lungs are normal. In cases of hypotension one is apt to encounter migratory type of pneumonia. The pseudo-crisis comes about the fifth or sixth day and the crisis five days after that.

4. There will be an absence of herpes labialis, rusty sputum, râles, dyspnea and cyanosis.

5. The temperature will be under 102°, respiratory rate under 20, and the pulse will be decreased also.

6. The crisis will come on the fifth day and by the seventh day the lung will be normal.

7. The prognosis will be good and recovery will be certain.

8. Nurses and cold fresh air may be dispensed with. Home care is all that is essential.

Now by way of comparison let me outline the treatment and enumerate the results obtained in our text-books. The text-book line of treatment may be briefly summarized, thus:

1. Nurses and cold fresh air.
2. Digitalize the heart.
3. Pneumonia jacket.
4. Treat the arising symptoms and signs with:
   a. Tape chest for pleuritic pain.
   b. Codine for pain and cough.
   c. Barbital derivatives for insomnia and restlessness.
   d. Atropine or belladonna for lung edema.
   e. Cough medicines.
   f. Wet packs and salicylates for the fever.
5. Treat the emergency signs and symptoms with:
   a. Digitalis or digifolin for auricular fibrillation.
   b. Respiratory failure with coramin and oxygen.
   c. Cardiac failure with camphor, strychnine, caffeine, digitalis and adrenalin.

The following results are the usual text-book findings:

1. There are no specific measures for aborting or preventing pneumonia. The measures recommended for the prevention of pneumonia and the usual precautions regarding health, care of the sick and of operative cases.

2. Empyema, edema of the lungs, relapses, cardiac and respiratory failure are too frequent complications of pneumonia.

3. Herpes labialis, rusty sputum, cough, dyspnea, cyanosis, râles are usually present.

4. Temperature is usually above 102°, respiratory rate about 33, and the pulse, markedly increased.

5. Crisis occurs about the tenth day, and it takes two to seven days more for the lung to clear up.

6. Prognosis is fair but usually doubtful. It is grave and usually fatal when pneumonia is complicated by such organic diseases as diabetes mellitus, myocarditis, nephritis, hypo- and hypertension, senility, adiposity, etc.

This marked difference in the results obtained from the line of treatment with the basic drugs as the specific remedy and the text-book line of treatment may be better shown by the chart contrasting the two lines of treatment.

I have used the basic drugs (sodium salicylate, calcium gluconate and parathormone) in the treatment of over 100 consecutive cases of lobar pneumonia and the so-called threatened pneumonia, which includes those cases of influenza, post-operation, etc., whose initial symptoms begin with chills, fever, pain in chest, cough, and localized râles. These latter cases respond to abortive measures. The lobar pneumonias, which number about one-half of all the cases, include the simple pneumonias, complicated pneumonias with such organic lesions as asthma, myocarditis, hypertension and hypotension blood pressures, diabetes mellitus, obesity, nephrosis, senility, etc., and postoperative pneumonias.

For purposes of demonstration I have selected four of the fifty lobar pneumonia cases, one simple and three complicated cases. You will see that the complicated cases behave and respond

Name of Condition	Basic Drugs	Text-book Treatment
Specific remedy	Yes, in the basic drugs	May be in Types 1 and 2 but in strict sense, no
Abortive and preventive measures	Yes	No
Respiratory and cardiac signed and symptoms	Alleviated and absent	Increased and distressed
Temperature, respiratory and pulse rates	Reduced	Increased
Crisis	Fifth Day	Tenth day
Course of illness	Curtailed	Run its course
Complications	Rarely, if any	Yes, too many
Prognosis	Good: recovery assured	Fair and grave in complicated cases
Mortality	In 50 cases, none	Much too high (40 per cent.)

to the basic drugs in the same way as do the simple pneumonias, and that because their recovery is assured, their symptoms alleviated, and the course of the illness curtailed, just as in the simple pneumonias, the prognosis need no longer be regarded as fatal nor grave. The simple case is that of a lobar pneumonia which was aborted, and the three complicated cases include the migratory type of pneumonia with hypotension, lobar pneumonia complicated by diabetes mellitus, and lobar pneumonia complicated by asthma and angina pectoris.

Cast 1. Lobar pneumonia aborted.

Mr. J., an Indian, aged 24 years, was seen April 18, 1932. After a hard tennis match he rested on the ground. He was unable to resume his play because he suddenly developed chilly sensations and a feeling of constriction in the chest. He betook himself to his hotel, a distance of three-quarters of a mile, where marked chills and pain in the left chest developed. About four hours later I was summoned and found him in bed with extra comforters over him. His chief complaints were pain in the left chest, painful breathing, fever, and expectoration of bloody sputum. On examination, temperature was 101°, pulse 102, and respirations 24. I was unable to percuss any dulness anteriorly or posteriorly, but posteriorly just below the left scapula there were elicited a patch of râles and bronchial breathing. A diagnosis of lobar pneumonia was made and treatment started. A 10 c.c. ampoule of 20 grains of sodium salicylate and a 10 c.c. ampoule of calcium gluconate were given intravenously every hour and a half, and 1 c.c. of parathormone was given intramuscularly once daily. The following chart shows the result of treatment.

Cast 2. Migratory Type of Pneumonia with Addison's Syndrome.

On the morning of February 15, 1932, a house call was made on Mr. W., aged 42 years, whose chief complaints were pain under right shoulder blade, painful and suppressed cough, blood streaked sputum and fever. He stated that the night before he developed marked chills and pain in the right chest. His wife added more comforters over him and gave him two aspirin tablets and a glass of hot lemonade. His chills subsided but the pain continued and later on he became feverish.

Patient was a small man, about five feet four inches in height and weighing 118 pounds. His skin was bronze. A month before onset his blood pressure was 95/65 and pulse 60. On examination, dulness, râles and bronchial breathing were found at middle of right lobe. A diagnosis of lobar pneumonia was made and treatment started. The progress of the case can best be shown on the following chart:

Remarks: On the fifth day of illness, with a chill, etc., the apical lobe became involved while resolution of the middle lobe was taking place. By the seventh day the middle lobe had cleared up and by the ninth day resolution of the apical lobe was taking place, and by the eleventh day the apical lobe had become normal.

Diagnosis: Migratory lobar pneumonia with Addison's syndrome. Complete recovery.

Case 3. Migratory lobar pneumonia with diabetes mellitus.

Mr. J., aged 29 years, was seen at his home on the afternoon of March 4, 1933. He complained of pain in the left shoulder joint which was increased by movement of arm. There was no redness nor swelling of the joint. There was no pleuritic pain, cough or expectoration. Temperature was 102° and pulse 102. A

Date	Time	Temp.	P.	R.	BM.	Notations and Medication
4/18	P. M.	101	102	24	0	Immobilized left chest with tape. Ampoule of sodium salicylate and calcium gluconate intravenously and parathormone s.c. Painful cough and bloody sputum.
4/19	A. M.	100.6	90	18	0	Sodium salicylate, calcium gluconate and parathormone. Feels better. Râles negative; bronchial breathing.
	P. M.	101	96	20	x	Medication same. No cough, bloody sputum or pain.
4/20	A. M.	98	70	15	x	Sweated freely during night. Feels P.K. No râles, bronchial breathing, or cough. Medication same.
4/21	P. M.	98	70	15	x	Lungs and heart normal. Out of bed but must be confined to room for two more days. Medication continued.

Diagnosis: Lobar pneumonia aborted.

preliminary diagnosis of acute arthritis was made. The arm was bandaged to the chest. An ampoule of calcium gluconate and one of sodium salicylate were given intravenously. Parathormone, 1.5 c.c., was given intramuscularly. For the past ten months the patient has been receiving insulin for diabetes mellius. Ten units morning and night sufficed for the last three months to keep him sugar free without dieting.

The patient weighed 140 pounds and was five feet, eleven inches tall. His blood pressure had been reading 95/70/25, and pulse 78.

On the following day, March 5, temperature was 103 and pulse 102. There were no other complaints than the painful shoulder joint. The ampoule of calcium gluconate and sodium salicylate and parathormone, and the ten units of insulin morning and evening were continued.

On March 6 temperature was 102, pulse 96. His shoulder was tender but there was no pain on motion. Urine was positive for sugar. Medication was continued as on previous day.

March 7 I was called to his home in the morning because of pain in the left chest, suppressed, painful cough and blood streaked sputum. On examination there were dulness, bronchial breathing and râles of the left lower lobe. A diagnosis of lobar pneumonia was made and treatment started. The treatment as outlined in the beginning of the paper was carried out, together with ten units of insulin twice a day. His progress is indicated on the chart.

Remarks: The pseudocrisis came on the fourth day and the true crisis on the eighth day, and by the eleventh day the lung was normal. After the temperature, pulse and respiration had been normal for about three days, and on the twelfth day, patient collapsed, due evidently to too much insulin. He recovered by withdrawing insulin, injecting dextrose and by raising the blood pressure with adrenalin and pituitary compound.

Diagnosis: Lobar pneumonia complicated by diabetes mellitus. Full recovery.

Date	Time	Temp.	P.	R.	B.M.	Notations and Medication
2/15	A. M.	100.6	96	20	0	Dulness râles, bronchial breathing, blood-streaked sputum. No cardiac murmurs. Chest taped. Intravenous injection of 1 ampoul of calcium gluconate and sodium salicylate, and intramuscular injection of parathormone.
	P. M.	100	90	18	x	Cough but no pain. Intravenous injection repeated. Feels good.
2/16	A. M.	100.8	96	18	0	Condition good.
	P. M.	100	90	18	0	Feels good. Sweats freely. Coughs a little. Calcium gluconate, sodium salicylate and parathormone repeated.
2/17	A. M.	100	90	16	x	Condition good. Slept well.
	P. M.	99.6	84	16	0	Feels fine. Takes liquids well. Cough gone. Medication repeated.
2/18	A. M.	100.6	96	18	x	Fair night. No bloody sputum, dyspnea, cyanosis or herpes. Few râles and bronchial breathing. Urine: No albumin or sugar: indican +; casts +; few red and pus cells. Blood pressure 120/70; pulse 50.
	P. M.	100	96	20	0	Feels restless and nervous; râles. Medication repeated. May have black coffee.
2/19	A. M.	101	96	20	0	Had a chill early this morning. Cough and blood streaked sputum. Moist râles and bronchial breathing over middle lobe. Dulness receding. Over apical lobe fine râles and bronchical breathing. Given one ampoule of calcium gluconate and sodium salicylate, and parathormone.
	P. M.	100.8	96	18	x	Good day. Consolidation of apical lobe.
2/20	A. M.	100.8	102	20	0	Middle lobe: Dulness gone, bronchial breathing changed to bronchovesicular; few scattered râles. Apical lobe: Bronchial breathing; no râles, cough, bloody sputum, dyspnea, cyanosis or herpes. Milk of magnesia and one ampoule of calcium gluconate and sodium salicylate, and parathormone given.
	P. M.	99.8	90	18	xx	Slight cough; no sputum; feels fair.
2/21	A. M.	99	84	18	0	Feels pretty good. Middle lobe back to normal.
	P. M.	99	96	18	x	Had attack of "weakness," but feels better now. One ampoule of calcium gluconate, sodium salicylate and parathormone.
2/22	A. M.	98	90	20	0	Feels somewhat weak. Had a profuse sweat during night; no cough, pain, cyanosis, or dyspnea.
	P. M.	98	84	18	0	Bronchovesicular breathing and few moist râles over apical lobe. Medication repeated.
Date	Time	Temp.	P.	R.	BM.	Notations and Medication
2/23	P. M.	98	78	16	x	Apical lobe back to normal. Tape removed. Feels better. One-half ampoule calcium gluconate; 5 c.c. Upjohn's glycerophosphate compound; parathormone 1 c.c.
2/24	P. M.	98	66	16	x	Feels fine. Lung clear.
2/25	P. M.	98	66	16	x	Feels fine. One-half ampoule calcium gluconate and 5 c.c. glycerophosphate comp.
2/26	P. M.	98	70	18	x	Sitting up on back rest. Feels good.
2/27	A. M.	98	70	18	x	One-half ampoule calcium gluconate and 5 c.c. glycerophosphate. Up in chair.
	P. M.	98	80	20		
2/29	P. M.	98	60	16	x	One-half ampoule calcium gluconate and 5 c.c. glycerophosphate. Up and about house. Feels good.
3/3	A. M.	98	60	15	x	Feels good. Medication the same. In arm chair.
3/6	A. M.	98	60	15	x	Feels fine. Blood pressure 100/70/30; medication the same.
3/15	Office	98	60	15	x	Blood pressure 95/65/30. Feels O. K. Lungs normal.

Case 4. Lobar pneumonia with angina pectris onset and complicated by asthma.

Mr. E., aged 45, weighing 209 pounds, and a sufferer from chronic asthma, was seen at his home on the morning of May 9, 1933. He complained of excruciating precordial pain which radiated down the left arm and painful constriction of the chest. The attack came on during the night and awakened him. It had been present

Date	Time	Temp.	P.	R.	BM.	Notations and Medications
3/7	A. M.	102	96	24	0	Painful cough, bloody sputum, dulness, bronchial breathing and râles of left lower lobe. Left chest taped. Calcium gluconate, sodium salicylate and parathormone and insulin continued. Digitalis tablets, 2 grains, four times daily.
	P. M.	101	96	18	x	Feels pretty good. Calcium gluconate and sodium salicylate given.
3/8	A. M.	100	90	16	x	Few râles in area of consolidation. Cough not troublesome. Glycosuria +. Calcium gluconate, sodium salicylate, parathormone, insulin and digitalis continued.
	P. M.	102	102	20	0	Calcium gluconate, sodium salicylate and digitalis.
	P. M.	101.8	102	18	0	Feels better. Insulin and digitalis.
3/9	A. M.	100	96	16	x	Calcium gluconate, sodium salicylate, parathormone, digifolin, insulin.
	P. M.	101	102	20	0	Calcium gluconate, sodium salicylate, insulin, digifolin.
3/10	A. M.	99	84	18	x	Restless night. Sweated freely. Medicine same with parathormone.
	P. M.	100	96	18	0	Few râles, pain in chest with suppressed cough. Medication same without parathormone.
3/11	A. M.	101	102	20	0	Râles, bronchovesicular breathing, recession of dulness of lower lobe. In left apical lobe, few fine râles, dulness and bronchial breathing. Re-taped chest. Cough troublsome. Medication same.
	P. M.	101.3	102	18	x	Feels better. No dyspnea, cyanosis. Fair appetite. Medication continued without parathormone.

Date	Time	Temp.	P.	R.	BM.	Notations and Medications
3/12	A. M.	100.4	96	16	x	Good night. Medicine same, with parathormone.
	P. M.	101	102	18	x	Cough loose, with rusty sputum; no pain or dyspnea. Râles of lower lobe. Medicine same as on previous afternoons.
3/13	A. M.	98	80	15	x	Sweat freely during night; feels fair. In lower lobe no dulness, rales or abnormal breath sounds. In apical lobe coarse râles and bronchovesicular breathting. Calcium gluconate, sodium salicylate, parathormone and insulin.
	P. M.	98	72	15	0	External piles; tympanitis; no cough; few râles of apical lobe; insulin given.
3/14	A. M.	98	84	16	0	Feels fair; piles; tympanitis; few coarse râles and normal breath sounds. Glycosuria + Insulin given.
	P. M.	98	78	18	xx	Piles better tympanitis still annoying. No cough; still few râles in apical lobe. Insulin, other medication and parathormone.
3/15	P. M.	98	72	16	x	Feels pretty good. Tympanitis not so bad. No cough, dyspnea or cyanosis. Calcium gluconate, sodium salicylate, parathormone, insulin.
3/16	7 A. M.	97	66	12	0	Was called because patient had sinking spell like he gets from too much insulin. He was weak and dyspneic, with cyanosis of lips and fingers. Pulse slow and of extra-systolic type. Heart sounds like a laboring, idling auto motor with a missing spark plug. Insulin stopped. Gave him adrenalin and pituitary compound subcutaneously and then an ampoule of 20 c.c. 50 per cent. dextrose with iodide of sodium, 16 grm.
	11 A. M.					Repeated adrenalin and pituitary compound; also gave ampoule of coramin. Feels better. Still has cyanosis of lips and fingertips. Heart not so labored and dyspnea less marked.
	4 P. M.					Adrenalin and pituitary compound repeated. Pulse still irregular (extrasystolic) and slower. Heart still laboring some. Cyanosis of fingers and lips.
	10 P. M.					Repeat adrenalin and pituitary compound; also coamin. Feels better. Heart tones stronger and pulse extrasystolic but of fair quality. Lungs clear.

Date	Time	Temp.	P.	R.	BM.	Notations and Medications
3/17	A. M.	98	72	16	x	An ampoule of 10 c.c., 16 gr. sodium iodide; feels stronger; pulse extrasystolic and fair quality. Heart action better. No râles or dyspnea but still cyanosis of lips and fingertips. Glycosuria +.
	P. M.					Much improved. Resting comfortably in bed although has developed aching legs.
3/18	P. M.	98	72	15	x	Feels better. Heart sound good. Pulse regular. No dyspnea and no cyanosis; sitting up in chair. Upjohn's glycerophosphate compound, 5 c.c. ampoule.
3/19	A. M.	98	72	14	x	In bed. Feeling fine. No dyspnea or distress.
3/21	A. M.	98	72	15		In bed but has been about the house. Feels fine. One-half ampoule of calcium gluconate and 5 c.c. glycerophosphate comp. Glycosuria +; no insulin.
3/25	A. M.	98	60	12	x	In bed, but in good condition. Calcium gluconate and glycerophosphate comp. Insulin resumed, 10 units morning and night.
3/27	A. M.	98	70	14	x	Condition good. Treatment as on 3/25.
3/30	A. M.	98	66	12	x	Condition good. Calcium gluconate and glycerophosphate comp. with insulin twice daily. Trace of sugar.
4/2	A. M.	98	72	14	x	Condition good. Medication same.
4/11	Office	98	84	15	x	Feels fine. Weighed 136 pounds; still receiving insulin twice daily at home. Trace of sugar in specimen after breakfast only. Blood pressure 95/70/25. Prescribed this mixture to be taken orally: Syr. ferri iodidi, dr. iv; syr. phosphate comp. oz. iv; essence of pepsin, q.s. ad oz. vi. Two teaspoonful t.i.d., p.c.
5/5	Office	98.2	72			Weighs 141 pounds. Blood pressure 100/65/35.

one hour when I saw him. Auscultation of the heart was negative for murmurs, and of the lungs gave the usual asthmatic breathing only on forced breathing. On questioning it was learned that the patient had gone out looking for work on the preceding morning and was unsuccessful in finding it. In the early part of the evening he spent a few hours in a saloon drinking and talking to friends. After that he boarded a street car and got off at his corner. While on the car he experienced a feeling of dizziness and dyspepsia which became more severe as he rode along. When he got off the car he had to support himself against the lamp-post for a quarter of an hour before he was able to proceed to his home. When he finally got into bed he was "all in." He dozed off to sleep and was awakened by sharp heart pain and constriction of the chest. Temperature 98 and pulse 98. He was given a hypodermic injection of ⅔ grain of pantopon and 1/100 nitroglycerine, with instructions to his sister, who is a nurse, to give him ⅓ grain of pantopon and 1/100 nitroglycerine in one hour.

At 10 A. M. I made another house call. The anginal attack was over but the patient complained of soreness and lameness of left arm, sensitiveness of the chest and a substernal ache. The abdomen was distended, rigid and extremely tender in the epigastric region. Temperature 98, pulse, 108, respiration 36. There were no cardiac murmurs. Faint asthmatic breathing was evident only on forced inspiration; otherwise the lungs were normal. A preliminary diagnosis of probable rupture of a gastric ulcer was made. Icebag to epigastrium and pantopon, gr. ⅔ subcutaneously, ordered. Ordered x-ray, urinalysis and blood count.

At 2 P. M. another house call was made. The report of the x-ray examination was that there was a consolidated patch in the center of the right middle lobe. Leucocyte count was 25,000 and urine was positive for sugar. Temperature 101, pulse 108, respirations 36. A diagnosis of lobar pneumonia was made and treatment started. The same routine as to systemic and local treatment as practised in the preceding cases was followed here. The progress is detailed in the chart.

Remarks: Onset with anginal attack. Crisis came on fifth day and by seventh day lung was normal.

Diagnosis: Lobar pneumonia with angina pectoris, at onset complicated by asthma. Full recovery.

In each of these cases the general *systemic treatment* included a liquid diet at first, then a semi-solid diet, with mineral waters, fruit juices, etc. Two to four teaspoonsful of sodium phosphate (Fleet) in a glass of water or a glass of citrate of magnesia or one to two tablespoonsful of milk of magnesia before breakfast, for a laxative were given as needed. Where vomiting or anorexia occurred, 20 c.c. of 50 per cent. dextrose were added to the intravenous basic medicines.

The *local treatment* included sedative palliatives, such as tapeing the chest, nasal oil drops, codein for pain and cough, allonal tablets for insomnia, and digitalis for the heart when needed; cough mixture such as syrup of thiocol, and stimulative palliatives, such as adrenalin and pituitary compound, coramin and digifolin. The basic medicines, a 10 c.c. ampoule of 10 per cent. calcium gluconate and a 10 c.c. ampoule of 20 grain sodium salicylate were given once or twice daily intravenously, and 1.5 c.c. and later on 1 c.c. of parathormone intramuscularly once daily at first and then every other day.

The recovery of these complicated cases can only prove that the treatment of lobar pneumonia by correcting the existing acute inflammation of the lung with the basic drugs of calcium salt, sodium salicylate and parathor-

Date	Time	Temp.	P.	R.	BM.	Notations and Medications
5/9	2 P. M.	101	108	36	0	Face flushed, suppuressed painful cough, râles and bronchial breathing. No cyanosis or dyspnea. Calcium gluconate, sodium salicylate and parathormone given.
	10 P. M.					Condition same. Calcium gluconate and sodium salicylate.
5/10	2 P. M.	101.4	108	32	x	Feels better; breathing easier. Dulness of middle lobe with bronchial breathing and a few scattered râles. Heart in good condition. Calcium gluconate, sodium salicylate and parathormone.
	10 P. M.					Same condition. Calcium gluconate and sodium salicylate.
5/11	A. M.	101	102	30	x	Feels better. No pain in chest; no cough; no cyanosis; no dyspnea. Calcium gluconate, sodium salicylate and parathormone.
	P. M.	101.4	108	33	0	Calcium gluconate and sodium salicylate.
5/12	A. M.	100.4	102	30	x	Calcium gluconate, sodium salicylate, and parathormone.
	P. M.	100	96	28		Feels fine. Bronchial breathing. Few scattered râles.
5/13		99	90	22	x	Good sweat last night. Râles coarse. Bronchovescular breathing. Dulness receding. Calcium gluconate, sodium salicylate and parathormone.
5/14		99	90	22	x	Sweated again. Scattered moist râles. Absence of bronchial breathing. Feeling fine. Calcium gluconate, sodium salicylate and parathormone.
5/15		98.4	84	22	x	Lung clear; no râles. Sits up in bed. Feels well. One-half ampoule calcium gluconate, sodium salicylate and parathormone.
5/16		98.6	84	22	x	Sitting up in chair at window. Parathormone.
5/ 7		98.6	84	22	x	Patient fully dressed; smoking cigar on back porch. Feels well.
5/18		98.6	84	22	x	Fully dress and walks about house; ready to look for work. Lungs clear but on deep forced expiration there is an occasional asthmatic râle.

mone is superior to the text-book method by treating the arising symptoms and combating toxemia, by means of various drugs and physical therapies. Furthermore, the results obtained by means of the basic drugs, as are evident by the certain recovery from the illness, mitigation of symptoms and signs and by curtailing the course of the illness, so that the crisis comes on the fifth day rather than on the tenth, ought to be conclusive enough that these drugs can be looked upon as the specific remedy in the treatment of lobar pneumonia until at least a specific serum is discovered. Even if a specific serum were available, these basic drugs would enhance its action by absorbing the products of the acute inflammation and therefore hastening recovery.

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ECTOPIC PREGNANCY: ITS RECOGNITION

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Approximately 600 women die in the continental United States each year as a result of ectopic pregnancy and its sequelae. This appears to be a rather small number in comparison to the average of 14,730 deaths in the same area, from all puerperal causes,[1] (about 4%) yet, when as Schumann[2] has shown, extrauterine pregnancy is found about once in 300 intrauterine pregnancies, the seriousness of the condition is apparent. This is a condition which may be cured in its incipiency, and indeed, even after the rupture has taken place, if it is recognized. It is with the view that we may more readily recognize the condition and, if possible, prevent the disaster, that this review of some 1,964 cases is made.

Etiology: Extrauterine pregnancy may take place at any time during the child-bearing period. Masson[3] has put the extremes at from 15 to 52. The most frequent age range in a total of 1,841 cases is 23 to 34, and the average is 18 to 40. The relation of ectopics to all pelvic disorders (45,307 cases), is 1 in 68 or 1.4%.

That previous salpingitis, usually gonorrheal, plays a major part in the arrest of the ovum outside of, or in the tube, there cannot be much doubt. Howard Taylor, Sr., in reporting 44 cases from the Roosevelt Hospital in New York, states that 76% gave a history of inflammation of the appendages or it was discovered at operation. Others gave the following figures: Franz 80%; Prochonsk 50%; Schurman 50%; Falk 33%. Van Etten cites Ahlfeld who states that in his many years experience at the University of Marburg "he saw so few cases of tubal gestation that he considers the relative freedom of his patients from gonorrhea as compared with those in the large cities, to be the only explanation."[4]

It has been said that an unusually long period of sterility often precedes an ectopic. This is true in some cases, as the tubes may be nonpatent as a result of infection; later, however, with the subsidence of the inflammation, the tubes again become patent and allow an opening to the uterus even though partially obstructed. It would appear, however, that primary sterility is not the rule since it occurred in only 10% of 2 different series totaling 553 cases and in 13.7% of a group comprising 410. The average number of pregnancies prior to ectopic in the latter group was 2.8%.[5]

Abnormal pregnancies prior to ectopic such as induced abortions, spontaneous abortion and previous ectopic are definite factors in the etiology (25% Urdan's series of 474).[6] The same is true of previous pelvic operations with their resultant inflammatory and adhesive processes.

New growths in the pelvis are apparently not as an important a cause of tubal arrest as is congenital diverticulae of the tubes. McNally in reporting 12 cases feels that this is a much more common cause of ovular arrest than is generally believed and cites Schoenholz as reporting 15 cases of congenital diverticulae in 32 pregnant tubes.[7]

The Outcome in Ectopic Gestation:

Dannreuther classifies the fate of the arrested ovum as falling into six different groups as follows:

Group 1 terminates in early tubal abortion: the embryo with a small amount of blood is extruded from the fimbriated end of the tube. The blood and the embryo lodge in the cul-de-sac and further bleeding from the tube does not occur. Following this either the pelvic hematocele is absorbed or it forms a small abscess.

Group 2 represents late tubal abortion in which there are repeated small hemorrhages from the distal end of the tube. The membranes re-

main attached within the tube and with each small hemorrhage the pulse and blood pressure are somewhat disturbed. Peritoneal irritation is set up as a result of the clots which in turn give rise to adhesions. In this group pain, metorrhagia and abdominal soreness come on frequently. If the diagnosis is made early and the patient operated on, only a few small clots are found in the pelvis and the adhesions easily separated. However, if the process goes on, adhesions become organized involving the viscera and operative difficulties are increased. Neglect of these cases long enough results in a sudden hemorrhage from the end of the tube or from a rent in its wall, and the entire clinical picture is changed to that of the tragic stage.

Group 3 represents the type in which there is no tendency to tubal abortion, rupture takes place with a massive abdominal hemorrhage as a result of the tearing of the ovarian artery and the patient goes into shock necessitating immediate treatment in order to save her life.

Group 4 represents the type in which the tube ruptures between the layers of the broad ligament to form an intraligamentous hematocele, the layers of the broad ligament restricting the amount of bleeding and the hemorrhage spontaneously arrested.

Group 5 represents interstitial (cornual) pregnancy in which the ovum may escape into the cavity of the uterus terminating thus in uterine abortion, or attach itself to the endometrium and go on to term. If it persists in the cornua rupture will eventually take place.

Group 6 represents the group in which the embryo escapes from the tube attaching itself somewhere on the peritoneal surface and developing as a true abdominal pregnancy which may either go on to term or die, and form a lithopedion or an adipocere.[8]

Aberration of the Menstrual History: The menstrual history is undoubtedly the most important single point in the study of any case of abnormal pregnancy and yet, at times, it is more confusing and misleading than helpful. In regard to the periodicity Novak[9] states that in a large proportion of cases menstruation is not skipped at all. He cites Farrar and Wynne in their two series comprising 612 cases, stating that only 345 showed amenorrhea. On the other hand Sellers and Sanders[10] in a study of 211 cases report over 90% as giving a history of either cessation of menstruation or inter-menstrual bleeding. In Lavell's series (410 cases) the appearance of the first symptoms of ectopic varied from one week from the last menstrual period to more than three months. The usual length of time elapsed was six weeks. In another group the average was about six weeks and eight of these patients had neither bleeding nor amenorrhea. Two other authors showed that amenorrhea occurred in 75% and 71% respectively in their series.

Even in the face of such confusion it is quite generally admitted that if the patient is very carefully questioned some variance in the menstrual history can be elicited. As a rule after a short period of amenorrhea, spotting occurs. Indeed, this may happen at the expected period-time and be interpreted as menstruation. Profuse bleeding is seldom present which helps to differentiate it from an incomplete abortion.

Vaginal bleeding or spotting is probably due to the following causes: [11]

1. Death of the fetus. (This is a mooted point).
2. Presence of viable chorionic villi in the tube.
3. Mechanical interference (Attempts to induce abortion).
4. Idiopathic: Analagous to those cases of intrauterine pregnancy in which spotting occurs in the early months.
5. Expulsion of a decidual cast.

Pain: Pain is so often associated with vaginal bleeding that it would be misleading to give one preference over the other. However, pain may sometimes be present without the bleeding. Pennoyer[12] and others[13] have reported pain being present in 93% to 99% and vaginal bleeding 65% to 70%. Pain varies with the underlying pathology. Before rupture, it is usually of a colicky nature, located in either of the iliac fossae, although the lumbar region and either of the abdominal quadrants are at times affected. The pains are often quite severe and even lancinating. Painful urination and defecation may also be present: the latter often indicative of a collection of blood in the pouch of Douglas. According to one large series of cases, the pain usually radiates to either or both of the shoulders, lumbar region, any part of the abdomen

(often epigastric), pelvic region in general, and the legs. The hip, rectum, perineum and vagina may also be affected at times. Pain referred to the chest and shoulders is usually due to diaphragmatic irritation as a result of intraperitoneal bleeding. It should be emphasized that the pain in ectopic is a variable thing. It follows no definite rule or classification and its exacerbations may be from hours to weeks apart. The attacks of sharp pain are probably due to repeated small hemorrhages into the peritoneal cavity.

No mention is made in the literature of the severe pain which may follow simple tubal abortion. The author has seen one case in which the pain was so severe that the leg was flexed tightly against the abdomen and held there with both hands, and indeed, the pain and apprehension so great that the leg could not be released until a general anesthetic had been given. Laparotomy was done immediately and a mass about the size of an English walnut was found in the isthmic portion of the tube on the flexed-leg side. There was no evidence of rupture, but a thick, tarry clot was oozing from the fimbriated end of the tube. The usual resection was done and the patient made an uneventful recovery.

Concomitant symptoms of pregnancy such as morning sickness, enlargement and tenderness of the breasts, increased frequency of urination, etc., are usually not present. However, at times they are definitely present and may be the only cause for the patient to seek medical advice. This was true of the author's case referred to above: the patient sought advice simply because she thought that she had trouble in both breasts.

The classical symptoms of ruptured ectopic pregnancy are pain and syncope. They may come on very suddenly with the onset of a massive hemorrhage. One case in the author's experience is striking: an organist in a large church was suddenly seized with a severe attack of lower abdominal pain during an Easter service, collapsed and fell from the organ bench. Laparotomy showed ruptured tubal pregnancy.

Novak[9] states that "only a small proportion of all tubal pregnancies—probably about 5%—are encountered in the so-called tragic or cataclysmic stage. In these it is, at times, possible to elicit a history of one or more previous attacks of colicky pain together with faintness or actual syncope, indicating, perhaps, repeated small hemorrhages before the actual deluge. In other cases the patient has had little or no previous warning, possibly having noticed only a small amount of abnormal uterine bleeding and a moderate discomfort in one or both lower abdominal quadrants. With the sudden onset of a massive hemorrhage there occurs a sharp lancinating pain in the involved side, weakness, syncope, extreme pallor, rapid pulse, cold clammy skin, sighing respiration, etc., in short all of the classical symptoms of alarming internal hemorrhage."

Differential Diagnosis: In a consideration of the diagnostic error Sellers et al[10] report 44 cases out of 135 in which the condition was incorrectly diagnosed: 16 as acute salpingo-oophoritis; 11 as acute appendicitis; 8 as uterine fibroid complicated by salpingitis. The remainder, each under 5, varied in the order given between ovarian cyst, pelvic abscess, incomplete abortion and ovarian cyst with twisted pedicle. Sellers cites Hawkes as reporting 28 mistakes out of 91 cases as follows:

Acute salpingo ovarian abscess	10
Acute appendicitis	5
Ovarian cyst	3
Incomplete abortion	3
Pelvic abscess	3
Fibroid	3
Cervical polyp	1

Adnexal disease, ovarian cyst and abortion head the list of missed diagnoses in Lavell's[5] series in which the total percentage of error before rupture was 15.3%. However, appendicitis and surgical conditions outside the pelvis were not considered.

Eleven mistakes out of one hundred cases at the Harlem Hospital in New York varied in order given: 1, acute salpingitis; 2 miscarriage with secondary anemia; 3, acute pelvic peritonitis; 4, ruptured pus tube.

Novak[9] feels that the most important condition to consider in the differential diagnosis are:

1. Threatened or incomplete abortion of uterine pregnancy: 1. Pain less severe than ectopic and rarely unilateral. 2. Uterus larger than ectopic for the same length of pregnancy. 3. Unilateral tender mass of true ectopic. (There is usually a much larger amount of blood lost in abortion.)

2. Acute pelvic inflammatory disease: 1. His-

tory of gonorrhea, post abortal or puerperal infection. 2. Higher fever in pelvic inflammatory disease. 3. Bilateral masses, usually, in pelvic inflammatory disease. 4. Lack of suggestive signs of pregnancy. 5. Absence of syncope with bleeding.

3. Ovarian Cysts (especially corpus luteum cyst): 1. Curettage shows presence of placental elements in ectopic.

4. Miscellaneous: 1. Ruptured corpus luteum or follicular cysts giving intra-abdominal hemorrhage (85 cases of this condition had been reported in the literature up to 1917). 2. Acute appendicitis. 3. Ovarian cyst with twisted pedicle.

Physical Examination. The most important finding in the physical examination before rupture is the presence of a unilateral adnexal mass in the pelvis which may or may not be tender; the following percentage of cases showing unilateral masses are given by different authors, in their combined series, representing 1536 cases: Grier 52%, Scheffey et al 52%; Sellers et al 49%; Farrar 95%, Lavell 90%. It must be remembered that in some of these cases no pelvic examination was done because of the obviousness of the condition following rupture or it was felt such a procedure was dangerous.

The next most important physical finding is enlargement of the uterus. This was true in 85.55% of Urdan's series although in 20.45% of these the uterus was described as indefinite. However, Scheffey et al (82 cases) found this to be present in only 19.5%. Novak feels that in the average run of cases that the "enlargement of the uterus is usually slight or perhaps not discernible at all. On the other hand when the uterus is much enlarged, the existence of intrauterine pregnancy can reasonably be assumed."

Movement of the cervix and coincidentally the uterus, often elicits severe pain. Polak explains this as due to irritation of free blood in contact with the peritoneal covering of the uterosacral ligaments. Some authors lay great stress on this, stating that by merely placing the fingers behind the cervix and gently lifting it up, will cause the patient marked discomfort. Kennedy[14] states, "in ectopic, the cervix is more tender than the lateral mass, while in pus tubes the lateral mass is more tender than the cervix. This one physical sign, cervical tenderness, means more to me than any information I acquire from pelvic examination." Novak states however, "the demonstration of a one-sided mass in the pelvis is little less than a sine qua non in the diagnosis of tubal pregnancy."

Chadwick's and Hegar's signs are sometimes present and if so, these findings should be given consideration but not by any means to the exclusion of other findings, for as Lavell has pointed out, "both of these are present in many other conditions including pre-menstrual congestion, and it is our opinion that they are not particularly important in ectopic." He also feels that tenderness on motion of the cervix is not a particularly important finding unless acute pelvic inflammation can be ruled out; however, if it can be ruled out, he considers the sign highly suggestive of ectopic.

Before rupture, abdominal examination per se is often not very informative although it should routinely be done before the pelvic. Tenderness, at this time is usually less than in appendicitis and pelvic inflammation.

The abdominal findings are, of course, wholly dependent upon the underlying condition: hemorrhage, peritubal hematocele, peritoneal irritation, etc. Where rupture has taken place there may be general or localized rigidity and tenderness is present in a large percentage of cases. With hemorrhage, dullness in the flanks may at times be demonstrated. Cullen's sign (bluish discoloration about the umbilicus) is at times present, but this is simply a sign which may be seen in any condition giving rise to a massive intra-abdominal hemorrhage. Abdominal distention is sometimes seen where there is a great amount of blood in the peritoneal cavity.

Diagnostic Aids.

1. Ascheim-Zondek Test:

This is probably the outstanding laboratory procedure that obtains today to clinch our clinical impression. Ascheim himself states "The test can be expected to be positive in tubal gestation when the embryo is alive, or not later than ten days after its death." When done, according to some of the latest modifications, it can be completed in 24 hours.[15]

2. Curettage and Decidual Casts:

Some authorities believe that 50% of all cases expel either a large fragment or small disintegrated pieces of a decidual cast. The patient

may speak of it as "a piece of skin," or call the physician's attention to it simply because of its different appearance from that usually seen in a menstrual discharge. Whenever this can be recovered and studied, histologically, decidual cells and glands of pregnancy can often be found. Likewise curettage may show chorionic villi or syncitial cells.

3. Sedimentation Time:

The same value holds true for the sedimentation test as does any other laboratory procedure, namely that its interpretation should be regarded only in the light of clinical findings. Considerable difference of opinion obtains in regard to the interpretation of this test: several authorities feel that with a sedimentation time below 30 minutes, pelvic inflammation should be strongly suspected; all are agreed that a rapid sedimentation time means infection somewhere in the body. One case in a large series where the sedimentation time was most rapid, a large infected hematocele was found.

4. Posterior Colpotomy:

This is a valuable procedure in certain instances, but it is not without danger. Introduction of infection into what would otherwise be a sterile field, in case laparotomy is imperative, should always be borne in mind, as should also the possibility of increasing hemorrhage. However, when the cul-de-sac is filled with a soft, easily accessible mass and doubt exists as to whether one is dealing with an abscess or a hematocele, colpotomy is probably justified. On the other hand, failure to obtain blood in a suspected ruptured ectopic may lead to a false impression, as in an early case where there may be only a small amount of bleeding into the cul-de-sac.

5. Temperature, Pulse and Respiration:

This is usually normal before rupture unless infection is present, as in infected hematocele. Occasionally a small fresh hemorrhage is accompanied by a temporary rise which soon reverts to normal. If the hemorrhage is massive, shock symptoms supervene with a weak thready pulse, low blood pressure and the temperature may fall to low levels.

6. Blood Studies:

Grier in reporting 50 cases from the Evanston (Ill.) Hospital, states, "The leucocyte count has been the most valuable laboratory finding. The hemoglobin readings were not as low as the pallor of the patient would indicate." He believes that since 39% of these cases showed a leucocyte count of over 15,000, it is quite indicative of free blood in the peritoneal cavity. Farrar and Hendry agree with Grier's conclusion. Masson states that the larger the amount of free blood, the higher the polymorphonuclear count.

Ricci and Di Palma[16] have observed that leucocyte counts between 20,000 and 40,000 do not exclude ectopic in favor of pelvic inflammatory disease, for in ruptured ectopics the white count may rise with each outpouring of blood into the peritoneal cavity. Schumann states that the white count is due entirely to peritoneal irritation set up by the contact of free blood with its cells.

No mention is made in any of the literature as to the value of the Schilling differential counts.

In regard to the red count and hemoglobin it has been found that before rupture neither is much reduced, unless there has been considerable uterine bleeding previously. Hemoglobin readings may at times be misleading when taken after suspected hemorrhage, as the percentage does not apparently decline with the blood volume loss. Oftentimes the hemoglobin readings do not drop until 24 to 72 hours after hemorrhage.[6] Ricci and Di Palma have made nearly the same observations. They explain this discrepancy as due to the fact that not sufficient time elapses before the absorption of an adequate amount of fluid lymph from the tissues into the circulation to dilute the remaining intravascular blood. They further state that the red blood count gives only an accurate index of the proportions between the fluid and the corpuscular elements of the blood remaining. Their observations are well substantiated by two series of cases: in one group of nine in which all of the patients were in shock and seen within 6 hours of the onset of severe symptoms the red blood count ranged from 3,500,000 to 4,900,000. In all the cases large quantities of free and clotted blood were found at operation. In their second series of 14 cases in which the duration of the colicky pain was present from 4 days to 4 weeks, the red count varied from 2,650,000 down to 1,000,000. Likewise in all these cases blood was found but much was clotted and many of the clots had apparently been present for some time.

CONCLUSIONS

1. The death rate as a result of ectopic gestation is high when one considers the small number of extrauterine pregnancies in relation to normal pregnancies.

2. Extrauterine pregnancy may take place at any time during the child-bearing period. Previous salpingitis, primary sterility, previous abnormal pregnancies, previous pelvic operations, diverticulae of the tubes, all are important factors in the etiology of this condition.

3. The arrested ovum may terminate as 1. early tubal abortion; 2. late tubal abortion; 3. rupture through the tubal wall resulting in a massive hemorrhage; 4. rupture between the layers of the broad ligament to form a intraligamentous hematocele; 5. interstitial pregnancy with or without uterine abortion; 6. true abdominal pregnancy.

4. The menstrual history is exceedingly important and yet may often be misleading, but a patient, careful questioning will usually bring out some variation in the menstrual sequence.

5. Pain is present in nearly all cases at some time during the course of the pregnancy and is apparently a somewhat more constant symptom than bleeding.

6. Adnexal disease, incomplete abortion, ovarian cyst, appendicitis, are among the conditions most commonly confused with ectopic pregnancy.

7. Unilateral adnexal mass, enlargement of the uterus, tenderness of the cervix on movement are among the most important physical findings before rupture.

8. The Ascheim-Zondek test, curettage and decidual casts, sedimentation time, pulse, temperature, respiration, blood pressure determinations, and blood studies are the best diagnostic aids.

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117 West First Street.

THE INCREASE IN MENTAL DISORDERS SPECIAL REMARKS ON MANIC-DEPRESSIVE GROUPS

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The purpose of this paper is to briefly bring before the eyes of the medical profession the vast problem confronting them in regards to the prevention and treatment of mental disorders.

There has been an enormous increase in the past years of patients suffering from mental disorders, and there are more of these than from all other diseases combined. This, of course, includes those organically afflicted, as in paresis and other brain lesions.

In Illinois, the hospitals caring for the insane had a population in 1868 of 493;[1] forty years later (1908) a population of 9,985; in 1933 24,998. The population on February 1, 1934, increased to 25,809. These figures do not include feeble-minded or prisoners. The population of feeble-minded in 1914 was 16,402 and in April, 1933, it had almost doubled, 31,367. From the figures mentioned above we can readily see that mental disorders are on the increase and it is calculated that this population will increase yearly by over 600. Illinois ranks second with its population of mental disorders.

In 1931 the Federal census of mental patients showed 305,315 or 293.2 per 100,000 were resi-

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dents in mental hospitals,[2] an increase of 37,698 since 1923. These figures do not include the inefficient, the shiftless, the delinquents, the criminals and prostitutes among whom mental defects and mental disorder are very common.

Much has been said of late about the thousands of boys who have been living the lives of hobos during the past three or four years.[3] With no employment, no opportunity for advanced schooling, with a natural desire for adventure, the ranks of this type of parasitism have been definitely increased. Many of these boys will come back home and live normal lives. But those lads with a definite neurotic tendency will go on and on in this asocial or antisocial method of living because it offers them a measure of irresponsibility. Many of them will end up in crime. Add to this multitude of social parasites the racketeer, the prostitutes, the grafter and scheming promotor who works within the law, the unethical professional man, the charlatan and similar types and you have a definite group of neurotics whose ever increasing members are a challenge to the newer knowledge of mental health and mental methods.

"With a World War in the not too distant past, an age of machinery and mass production, the mad pursuit of material wealth, and four years of economic distress, the complexities of the modern civilized life have created a lengthening shadow of a disaster unparalleled in history that can be averted only by the use of our present knowledge of mental disease, its prevention and cure. We are equipped to fight epidemics of typhoid, diphtheria and smallpox. We know how to prevent rabies, tuberculosis and syphilis. A score of other diseases are under our control, although they still offer us problems. When we combine the victims of maleria, scarlet fever, pneumonia, cancer, heart disease and all other diseases which afflict the citizens of this State, they are but a handful compared to the countless thousands that are headed toward mental disease in our lifetime."

This problem is stupendous and has never been adequately tackled and the problem of prevention until recently not at all. In the matter of institutional accommodation there is an urgent need for addition and extension.

The question arises whether we are dealing with the problem in the best way; whether it is not steadily growing greater because the right measures are taken too late.

We could render unnecessary much of the misery, money spending and machinery which is necessary if we treated early the causes of mental disorders and its companions and consequences, criminality, vice, alcoholism, poverty, unemployment and the like. This goal can only be reached by an intense and systemic study throughout the State and country in a well organized scheme and with all the means at our command of the causation of mental disorders. Many organizations in mental hygiene and child hygiene in this country are doing a great deal towards the prevention of mental disorders. The civil works projects have aided materially in preventing mental disorders, crime, etc., by making idle minds busy.

Heredity plays a part in contributing toward mental disorders. It has been impossible to obtain definite data. Human families with their long intervals between generations and the small number of their members do not lend themselves to the studies of heredity. Moreover it is often necessary to collect data on a hearsay basis only. Such terms as "nervousness," "irritability," "headstrong," and so on, especially given by lay persons can have little value. Clinical experience forces the conclusion that heredity is of considerable importance. It is common to find mental disorders in the immediate ancestors of schizophrenics, although more usually not in the direct line. Heredity plays a part in about 17% of this particular group. The manic-depressive group often has a family incidence. Studies in this group made by Farr and Smith[4] show that 76% of patients have relatives in which tainting with temperamental and various other deviations from the normal were prominent. C. A. Bonner,[5] during a two-year period beginning with June 1, 1928, studied 100 manic-depressive cases, 63 women and 37 men at the Danver State Hospital and found heredity positive in 50 cases tending to support the text-book statement in regard to heredity; 50 cases occurred from causes unknown. He listed the following psychogenic factors as causative agents: Friction or discord in the family, 25 cases. Reaction to financial situation such as business failures, loss of savings in stock market crashes, etc., or unemployment, 15 cases. Recent death in family, 9 cases. Serious anxiety for member of family, 16 cases. Disap-

pointment in a love affair, 6 cases. Severe emotional stress from other causes such as occupational mal-adjustment, 7 cases. Five cases, all women, succumbed to situations mildly unpleasant, mere petty annoyances such as most of us have to face and tolerate nearly every day.

In the study of pathological changes[6] in the various organs no definite conclusions have been made due to the small amount of material for study and the advanced age at which death occurs.

Briefly the symptomatology is characterized by three main symptoms (a) elated though unstable mood, (b) flight of ideas, (c) psychomotor activity.[7] These basic symptoms, although present in every case, are to be considered as a background or setting for the development of other symptoms. In some cases the elated mood may predominate clinically, whereas in the other cases it may be the restlessness or overtalkativeness. Other features usually complicate the picture and irritability, suspicion, a clouding of consciousness with delusions, hallucinations, disorientation and lack of insight may all appear. Such symptoms as irritability, suspicion, hallucinations, etc., are usually transitory; occuring at the height of the illness are not of the same significance as they would be if they occurred in a setting of clear consciousness.

Prognosis:[7] Manic-Depressive Psychosis has on the whole a favorable prognosis. This is especially true for the single attacks and the intermittent types which occur so frequently in the young people during the second and third decades. Although ultimate recovery is not often in doubt, there is little to guide us regarding the duration of the attacks.

Treatment:[7] Early attacks of either mania or depression may be managed satisfactorily under home conditions, but if the attacks are repeated their duration is apt to become prolonged, care and management become complicated, and recourse must be had to institutional treatment.

It is true, irrespective of what is done, many cases get well of their own accord, while, on the other hand, other cases tend to have recurring attacks, or else never entirely clear up. There is no specific form of therapy, because each form is different from every other, and must be treated on its merits. The essential principle is to reduce life to a very simple level. No special demand should be made, but the patient should be gradually encouraged to acquire satisfactory interests and habits, and to build upon these:

Care of the general health.

Nutritious diets.

Rest, especially at night.

Supervision at all times to prevent harm to himself or others.

Artificial feeding when patient is so depressed that he refuses food.

Hydrotherapy—continuous baths. Douching and spraying are helpful.

Sedatives are given when necessary, such as paraldehyde, bromide and chloral and sodium amytol.

Psychotherapy.

When patient shows improvement occupational therapy aids materially in their recovery.

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QUACKERY IN THE TREATMENT OF CATARACT

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People in general believe what they like to hear, and they like to hear what they believe. None of us wants to have a cataract; indeed we would do almost anything to prevent having a cataract; so when our neighbors tell us that eating certain foods, or taking certain medicines or saying a certain ritual, or keeping a rabbit's foot in our pocket, or rolling or cupping our eyes will ward off cataracts, we are apt to fall for it. It seems so simple to do these things. A few years ago certain serums were guaranteed to dissolve cataracts. At present our quacks are vitamin-conscious.

Let me illustrate by telling a true story. A few weeks ago a woman consulted one of the prominent eye physicians in the city because she had been told there would have to be an imme-

diate operation for cataract. She had been taking oil of carrots to dissolve the cataract. The eye physician on careful examination found that with a slight change of glasses she had almost perfect sight. She could even read the fine print in the daily papers. She did have a sort of cataract—the kind that exists for many years practically unchanged. It was not interfering with her vision, and it might not materially interfere with her sight for another ten or twenty years. All she needed was the proper glasses. She did not need oil of carrots or any other special food or medicine.

The person who told her she had a cataract and would have to be operated on at once was a quack; her cataract did not interfere with her sight; but even if it had it would not require *immediate* operation. It is very rare indeed to find a cataract requiring immediate operation. There are a few eye conditions which do occasionally need immediate surgical intervention, but very seldom does cataract fall in this group. Therefore, this man was either quite ignorant of the condition about which he advised this woman, or else he was malicious.

Let me cite another instance. A man examined seventeen years ago was found to have a partial cataract in each eye. It was the same sort of cataract as in the first case. These cataracts have not changed in the least; and his sight is practically the same now as seventeen years ago. He has lived a normal life, seldom takes medicine, says no special rituals, does not roll or cup his eyes and eats a good general diet.

You ask, "Is there more than one kind of cataract?" Yes, there are several kinds. A few babies are born with cataracts. They may be merely faint spots or faint clouds, or they may be more dense. Some are even so dense that only light is perceived. The great majority of such cataracts may be operated on and sight may be restored to these little patients, so that they can run, play and go to school with other youngsters.

There is a type of cataract which develops in youth, and a type also which develops in later life. Occasionally we find families in which at a certain age cataracts develop in almost every member. A blow on the eye with a fist, a baseball or a stone may cause a cataract. When a piece of metal penetrates the eye it may touch the lens and injure it. In many industries all men exposed to flying particles are compelled to wear goggles This has saved thousands of eyes. Certain rays of light such as come from very hot furnaces can cause cataract. "Glass blowers" cataracts are of this type. Proper goggles now afford 100% protection to such workmen.

Some diseases interfere with the normal nourishment of the crystalline lens; it thus loses its transparency; that is, it becomes a cataract. In uncontrolled diabetes and in parathyroid deficiency we often see cataracts.

Occasionally a condition is called a cataract which is not that at all. For example, when a skin grows over the front of the eye it is erroneously termed cataract by some people. What then is a cataract? You have heard of the eye being compared to a camera? In the front part of the eye there is a diaphragm called the iris, in the center of which there is a hole called the pupil. As the diaphragm of the camera can be regulated so as to admit more or less light, so the pupil can be made larger or smaller for the same reason. Back of this iris is a crystal clear lens which focuses the light that comes through the pupil. The light is thus focused on the retina just as it is focused on the plate or the film of the camera.

When the lens is not crystal clear, but is a little cloudy, or has spots on it, we call it cataractous. The spots may be in the center or way out at the edge where they are covered by the iris. In the latter case the cataract could not be found unless the pupil was widely dilated; and of course, such a cataract could exist for many years without interfering in the least with sight.

If a person has such a cataract all he needs to do is to have his glasses changed when necessary; sometimes this is every two years; sometimes oftener and again sometimes not as often. Suppose Mr. A. has such a cataract; he has been told of it and he has at once pictured himself as about to become blind; he may even see himself walking down the street with a cane, a tin-cup and a dog. His friends advise him to eat carrots, or to say "Every day in every way I am getting better and better." When he finds that his sight does not become worse after a few weeks or months or even years, he is convinced that the treatment is beneficial. Of course, he will tell his friends that his own particular regime keeps cataracts from becoming worse; he may

even generalize and say all cataracts may be controlled by this method.

Is there, then, nothing that one can do to prevent cataracts or to stop them from advancing if and when they begin to advance? Indeed there is. But it is not mysterious nor is it a secret. It is what everyone knows.

Keep well. Be temperate in all things. Take exercise in moderation. Do not worry; the world will move even smoother if you do not worry. Sleep well. Eat a general diet of fruits, vegetables, salads, meat, fish, etc.; unless your physician has prescribed a special diet for you. Let your physician keep you well; that is better than having him try to cure you once you become sick. He can often detect the earliest symptoms of a disease and abort it before it has become established. A stitch in time saves nine.

The teeth also need regular attention, especially if you have any dead teeth. We have some reason to believe that infected dead teeth may be one of the causes of cataract.

When it comes to your eyes, remember you have only two of these priceless possessions. Entrust them only to an eye physician. Make a confidant of him. He can help you. He has spent years in medical training and then has spent additional years in becoming familiar with all sorts of eye conditions. He knows the relation of the eyes to the other organs of the body. He knows how and why weakness of the various organs of the body and advancing age make their marks on the eye. He knows what worry will do to eyes and what changes overwork and fatigue will cause. He can tell whether certain symptoms are due to so-called "nerves" or to trouble in the eyes themselves. He alone can make a reliable diagnosis of complicated conditions of the eyes. His tests require time and patience.

I have spoken mainly of the kinds of cataracts that do not advance or advance very slowly. Any treatment used for them will be given credit that is not deserved. Some cataracts advance more rapidly. If there are no complications it is the rule to wait until they are ripe or nearly ripe before operating. This rule has been established as the result of long experience of thousands of eye physicians. A quack will brush a rule lightly to one side if he thinks he can advance his own interests in so doing. Seek reliable advice.

122 So. Michigan Blvd.

TRICHINOSIS OF MAN A COMMON INFECTION

In order to obtain more definite data relative to the incidence of trichinosis, William A. Riley and Charles H. Scheifley, Minneapolis (*Journal A. M. A.*, April 14, 1934), outlined a project involving the examination of diaphragm muscles from the cadavers used in the dissecting rooms of the University of Minnesota Medical School, similar examination of necropsies representing a more normal population, and extension of earlier studies on the occurrence of the encysted worms in local hogs, rats and other animals. Their examinations of 117 cadavers revealed twenty cases of trichinosis, in subjects who were never recorded as exhibiting any symptoms of the infection. This makes for the group an incidence of 17.9 per cent. Their series from necropsies is as yet too limited to be significant. A rough classification on the basis of severity of the infestation was made. The classification is not intended as an index of clinical symptoms, although it is certain that there must have been definite illness in the half dozen cases classed as "severe." In no instance was there any information to indicate that there had been any suspicion of trichinosis. The most heavy infestation, exhibiting some 350 cysts to the slide, was that of an Irishman, 86 years of age, who died of arteriosclerosis. The cysts were heavily calcified. Since no adequate treatment for the disease is known, it is evident that there is still abundant need for educating the public regarding the source of trichinosis and the simple means of protection that may be taken against the infection. Much would be gained also by the extension to small plants of the federal regulations regarding the preparation of sausages and other pork products of a kind that are customarily consumed without being cooked.

TINTED LENSES: THE PRESENT DEAL

W. W. Coblentz, Washington, D. C. (*Journal A. M. A.*, April 14, 1934), states that, while during the past two years thare has been some improvement in the fairness of the claims made in the literature advertising tinted lenses, there is still a long way to go in the presentation of relevant facts as distinguished from unproved theories. It is a safe guess that these advertisements are not seen by many undiscriminating laymen but are read mainly by trained ophthalmologists. It would therefore be a sad reflection on the intelligence of such readers to assume that they accept the "ballyhoo" part of the advertising as proved facts of importance in their profession.

NEW ONE FOR THE BRAIN TRUST

"An economist," says the Omaha *Journal-Stockman*, "is a man who knows a great deal about a very little; and who goes on knowing more and more about less, until finally he knows practically everything about nothing; whereas, a professor, on the other hand, is a man who knows a very little about a great deal and keeps on knowing less and less about more until finally, he knows practically nothing about everything.—*Leavenworth Times.*

Marriages

MARSHALL QUENTIN BAKER to Miss Belle Claire Good, both of Chicago, June 24.

EDWIN G. QUATTLEBAUM, JR., to Miss Betty Cummings, both of Rockford, Ill., May 19.

SIMON S. RUBIN, Chicago, to Miss Anna Chesney of Philadelphia, May 25.

SIMON YOUNG SALTMAN, Chicago, to Miss Goldye Lazarus of Brooklyn, July 1.

Personals

Dr. Robert E. Schlueter, St. Louis, addressed the Clinton County Medical Society at Breese, June 13, on cancer of the breast.

Dr. Charles P. Emerson, Indianapolis, discussed oriental medicine before the Peoria City Medical Society, June 5.

Dr. Charles H. Phifer was installed as president of the Chicago Medical Society at its recent annual election, and Dr. Julius H. Hess was named president-elect.

Dr. Albert E. Luckhardt was recently appointed associate clinical professor in the department of medicine at Loyola University School of Medicine.

Dr. George K. Fenn was elected president of the Chicago Society of Internal Medicine at its annual meeting, recently; Dr. Walter L. Palmer, vice-president, and Dr. Clarence F. G. Brown, secretary.

Dr. Edward L. Cornell was named president-elect of the Chicago Gynecological Society, June 22, and Dr. Irving F. Stein was installed as president. Dr. Charles Edwin Galloway is secretary.

Dr. Logan Clendening, Kansas City, was the guest speaker at the eightieth anniversary celebration of the McLean County Medical Society in Bloomington, May 8; his subject was "Historical Medical Books, Paintings and Places."

Speakers before the Whiteside County Medical Society in Prophetstown, June 26, were Drs. Walter H. Nadler and Merritt Paul Starr, Chicago, on diabetes and control of edema in congestive heart failure by diuresis, respectively.

Dr. Harry L. Huber has been promoted to associate clinical professor of medicine, Division of Biological Sciences, University of Chicago, effective July 1. Dr. Rudolph Schindler, Munich, has been appointed visiting professor of medicine in the division.

Dr. William Allen Pusey delivered the Prosser White Oration before the St. John's Hospital Dermatological Society, June 27, at the Royal Society of Medicine, England; his subject was "Disease, Gadfly of the Mind, Especially the Stimulus of Disease in the Development of the Mind."

Dr. Francis L. Lederer, who has been associate professor and acting head of the department of rhinology, laryngology and otology, University of Illinois College of Medicine, has been appointed professor and head of the department to succeed Dr. Norval H. Pierce, who is now professor emeritus.

Dr. Haim I. Davis, professor of psychiatry at the University of Illinois College of Medicine since 1926, has been made emeritus professor, effective September 1. Dr. Davis has been requested to continue with his teaching, however. He has been associated with the school since 1908.

Dr. Roy Sexton, Streator, received the merit award of Northwestern University Alumni Association on "illumination night" in Evanston, Ill., preceding the annual commencement exercises, June 15. The award is a certificate and is given annually to alumni for "worthy achievement which has reflected credit upon their alma mater."

News Notes

—The Institute of Medicine of Chicago is again offering the Joseph A. Capps Prize of $500 to graduates of Chicago medical schools who have received the degree of doctor of medicine during the year 1932 or thereafter. The prize will be awarded for the most meritorious investigation in medicine or in the specialties. Investigation in the fundamental sciences will be considered also, provided the work has a definite bearing on some medical problem. Manuscripts must be submitted to the secretary of the Institute of Medicine of Chicago, 122 South Michigan Avenue, not later than December 31.

—Opportunity will be given to adults for chest examinations to detect heart impairment as a part of the program of the state health department at the State Fair, August 18-25, in Springfield. The examinations will include electrocardiograms in as many cases as practicable. All

volunteers, so far as facilities permit, will be tested for blood pressure, height, weight and perhaps one or two other factors, such as lung capacity. Facilities for taking roentgenograms of 500 young persons between 12 and 19 years of age to detect early tuberculosis will also be available, those from families with a history of the disease to be given preference. Well babies and children will also be given medical examinations.

—Dr. Arvid Wallgren, professor of pediatrics and chief of the Children's Hospital at Gothenburg, Sweden, delivered the Theodore B. Sachs resident lectures in tuberculosis of the University of Illinois College of Medicine, June 6-7. These lectures were established at the college for a five year period by the Chicago Tuberculosis Institute. During the reunion of the alumni of the college, Dr. Edward W. A. Ochsner, professor and head of the department of surgery, Tulane University School of Medicine, New Orleans, gave the alumni memorial lecture on "Postoperative Care in Abdominal Surgery Based on Clinical and Experimental Observations."

—There were 2,177 deaths from automobile accidents in Illinois during 1933 as compared with 2,104 in 1932, giving a rate of 28.5 for the state as a whole as against 27.5 per hundred thousand of population in 1932. The rate for the state exclusive of Chicago was 28.8, and for Chicago, alone, 28. According to the Chicago *Tribune*, at a recent meeting of the Illinois Conference on Highway Safety Legislation, which is sponsoring drivers' license and financial responsibility laws to reduce accidents, J. S. Baker, engineer for the National Safety Council, estimated that accidents of all descriptions have increased about 50 per cent in the first few months of this year as compared with the corresponding period of 1933. He also declared that the number of accidents is growing faster in rural than in urban areas.

—Physicians are asked to be on the alert for patients with symptoms suggestive of typhoid and amebiasis which might result from water consumed at the fire in the Union Stock Yards, May 19. On June 25, thirty-three persons ill with typhoid had been reported to the city board of health. It was pointed out that these persons drank from cattle troughs and almost any place they found water available. The city water supply was and is safe, and only certain persons of those whod rank contaminated water became infected. Eighteen suspected typhoid cases were being investigated at the time of this report; most of these persons also drank water at the stockyards. Following the fire, eight of the thirty-three patients were ill with diarrhea, cramps, nausea and fever for a day or two and recovered. Later, however, they became ill with typhoid. Definite onset dates of these thirty-three cases range from June 1 to June 16. Physicians are urged to avail themselves of the facilities of the laboratory of the health department when they encounter a case they suspect of being either amebiasis or typhoid.

Deaths

FANNIE EMANUEL, Chicago; Chicago Hospital College of Medicine, 1915; aged 61; died, March 31, of diabetes mellitus.

PAUL HAYS FITHIAN, Danville, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1890; Rush Medical College, Chicago, 1891; member of Illinois State Medical Society; aged 68; died May 22, in Kankakee, of cerebral hemorrhage.

MARTIN MCMANN, Palmyra, Ill.; Missouri Medical College, St. Louis, 1885; aged 75; died, April 29, in Peoria, of chronic myocarditis.

FRANK ROY MORTON, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; past president and secretary of the Chicago Medical Society; fellow of the American College of Surgeons; chief surgeon to the Standard Oil Company of Indiana; on the staff of the Henrotin Hospital; aged 53; died, June 16, in Joliet, Ill., of Coronary thrombosis.

VERNON CURRY MORTON, Rantoul, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1897; on the staff of the Mercy Hospital, Champaign; aged 58; died suddenly, June 19, of angina pectoris.

NEIL LAWRENCE O'HERRIN, Oak Park, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1912; aged 58; died, June 10, of heart disease and diabetes mellitus.

BRUCE DOWNING PARRISH, Mattoon, Ill.; Louisville (Ky.) Medical College, 1889; aged 67; died, April 5, of heart disease.

THOMAS ROBERT PLUMER, Trivoli Ill.; Northwestern University Medical School, Chicago, 1930; aged 28, was kiled June 24, in an airplane accident.

GEORGE AUGUSTUS POST, Chicago; College of Physicians and Surgeons of Chicago, 1889; aged 74; died, April 1, of chronic myocarditis.

CARMEN FRANK RUSSO, Chicago; University of Illinois College of Medicine, Chicago, 1931; aged 32; died, May 25, of pulmonary tuberculosis.

JOHN FLETCHER TAYLOR, Buda, Ill.; Rush Medical College, Chicago, 1895; served during the World War; aged 59; died, March 1, of pulmonary carcinoma.

ITIVE PEOPLES. BY JULIUS JARCHO, M. D. WITH 130 ILLUSTRATIONS. PAUL B. HOEBER, INC. NEW YORK. PRICE $3.50.

This work is to be considered a companion book to the author's earlier work "Pelvis In Obstetrics." It transmits to modern obstetricians the application of those postures and practices utilized to advantage by primitive peoples in coping with their obstetric problems. Modern scientifically interpreted adaptations of the more helpful methods used by primitive peoples may assist the general practitioner or obstetrician who finds himself confronted with a difficult case in an isolated community without the aid of modern obstetric facilities.

A PRACTICAL MEDICAL DICTIONARY. BY THOMAS LATHROP STEDMAN, M. D. TWELFTH, REVISED EDITION. ILLUSTRATED. BALTIMORE, MD. WILLIAM WOOD & COMPANY. 1933. PRICE $7.00. INDEXED COPY $7.50.

This edition contains about a thousand new titles, without counting several hundred new sub-titles; that is to say, the prolific medical jargon has grown to an average of more than one new word a day during the past three years.

The admission of so large a number of new words has necessitated the addition of 33 pages to the book.

In this revision are noted all the changes in the British Pharmacopoeia of 1932. The work is amply illustrated. 1222 pages. Bound in flexible fabrikoid. Thumb indexed. The work is very complete and up-to-date.

"Anyone who is interested in the purification of medical orthography will enjoy using this dictionary. The author is known for his effort—extending over a period of many years—to insist on the use of the correct term in every instance. This dictionary is his supreme effort in that direction. To mention all of the fine features would entail too much space. It is a real medical dictionary in every sense of the word."

THE SURGICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume 14, Number 3, (Mayo Clinic Number—June, 1934) Octavo of 221 pages with 70 illustrations. Per Clinic Year, February 1934 to December 1934. Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company, 1934.

The contributors to this number are Drs. Adson, Allen, Atkinson, Balfour, Barber, Beaver, Bennett, Church, Counseller Craig Dixon, Figi, Foor, Ghormley, Gray, Harrington, Havens, Henderson, Judd, Lillie, Lundy, Masson, Mayo, Meyerding, Moersch, New, Pemberton, Phillips, Priestly, Smith, Thompson, Voris, Waldron, Walters Watson Whitlock Woltman.

A PRIMER FOR DIABETIC PATIENTS, A Brief Outline of the Treatment of Diabetes with Diet and Insulin, Including Directions and Charts for the Use of Physicians in Planning Diet Prescriptions: By Russell M. Wilder, M. D., Professor and Chief of the Department of Medicine of The Mayo Foundation, University of Minnesota; Head of Section on General Metabolism, Division of Medicine, The Mayo Clinic. Fifth Edition Reset. 172 pages. Philadelphia and London: W. B. Saunders Company, 1934. Cloth, $1.75 net.

MANUAL OF THE DISEASES OF THE EYE. BY CHARLES H. MAY, M. D. FOURTEENTH EDITION REVISED. WITH 376-ORIGINAL ILLUSTRATIONS INCLUDING 25 PLATES WITH 78 COLORED FIGURES. BALTIMORE. WM. WOOD & COMPANY. 1934. PRICE $4.00.

This work is intended for students and general practioners. The book has been again carefully revised and some chapters rewritten; there have been some additions. Some illustrations have been replaced, others have been deleted, and a number have been added.

THAT HEART OF YOURS. BY S. CALVIN SMITH, M. D. ILLUSTRATED. PHILADELPHIA, LONDON, MONTREAL. J. B. LIPPINCOTT COMPANY. 1934. PRICE $2.00.

This work is a message of optimism and heart care for hurrying humanity. Without a word of alarm the author tells about the heart in illness and in health, in distress and in comfort, at work and at rest, in fact a full recital of the intimate details of heart care.

THE PART PLAYED BY VITAMINS

Vitamin A—Promotes normal growth and strengthens resistance to colds and similar infections.

Vitamin B—Prevents nervousness, beriberi, pellagra and many common related maladies.

Vitamin C—Prevents tooth decay and scurvy. (Most easily destroyed of all vitamins. This vitamin is destroyed by heat in cooked foods.) It cannot be stored in the body, therefore some food containing it should be taken daily.

Vitamin D—Develops strong bones. It is frequently referred to as "The Sunshine Vitamin."

Vitamin E—Called the fertility vitamin, gives power to the reproduction organs and assists in preventing sterility.

Water should be boiling and salted before rice, noodles, macaroni or spaghetti is added.

Celery leaves dried and added to soup will improve the flavor.

HINT

The slowness of some people to take a hint is more than exasperating.

A Scotsman paid a visit to a friend in London, but stayed far longer than was expected. Time dragged on, and still the visitor from the North made no attempt to leave. At length the friend dropped a gentle hint.

"Don't you think," he said, "that your wife and children would like to see you again?"

"Thanks verra much," was the answer. "It is most awful kind of you. I'll send for them."

As Shakespeare once said, "Bow legs may not be few, but they're far between."—*Log.*

3,272 people died of gas last year, 41 inhaled it, 31 lighted it by touching a match to it, 3,200 stepped on it. —*Purple Parrot.*

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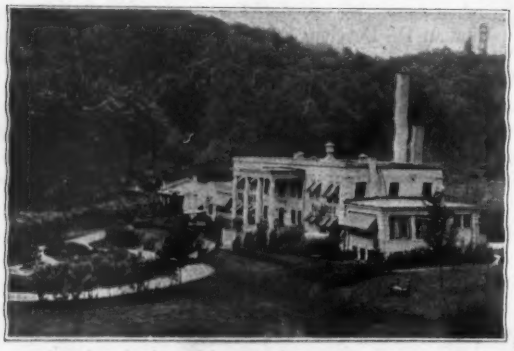

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